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Industrial Process Fugitive Emissions Inventory for the Region V Great Lakes Shoreline

Pacific Environmental Services, Inc.
Elmhurst, IL

Prepared for

Environmental Protection Agency
Chicago, IL

1980

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REPORT

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This report was the result of a limited-scope preliminary study of particulate fugitive emissions from major industrial sources located within the six states of U.S. EPA Region V. This study revealed that approximately 229,000 to 531,000 tons of fugitive particulates were deposited into the Great Lakes during 1978. Large industrial cities such as Chicago, Gary, Cleveland, Toledo, Detroit, and Milwaukee were found to have the largest concentration of major fugitive emission sources. Iron and steel industries were found to be the largest fugitive emission sources bordering the lakes.

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INDUSTRIAL PROCESS FUGITIVE EMISSIONS INVENTORY FOR THE REGION V GREAT LAKES SHORELINE

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LIST OF COMMONLY USED ABBREVIATIONS USED THROUGHOUT THE TEXT

AP-42	Compilation of Air Pollution Emission Factors
BOF	Basic Oxygen Furnace
EAF	Electric Arc Furnace
EIF	Electric Induction Furnace
IJC	International Joint Commission
IPFPE	Industrial Process Fugitive Particulate Emissions
LCD	Local Climatological Data
OHF	Open Hearth Furnace
PCB	Polychlorinated Biphenols
SIC	Standard Industrial Classification
TSP	Total Suspended Particulates

1.0 INTRODUCTION

1.1 BACKGROUND

Prior to 1969, the atmosphere had not been considered as an important pathway for the loading of material to the Great Lakes Basin. During the period of 1969 through 1975, several preliminary studies were completed which indicated that significant amounts of material were being deposited on the lakes' surfaces by the various atmospheric mechanisms. The International Joint Commission (IJC), a bilateral board with representatives from the United States and Canada, had reported that substantial quantities of nutrients and toxic materials were being deposited in the Great Lakes Basin from the atmosphere, both in rainfall and in dry fallout. These deposits may fall directly into the lakes, or may enter indirectly from land runoff following precipitation in the Basin area. The atmospheric contributions of phosphorus directly to the Great Lakes in 1978 were estimated to be: Lake Superior, 59 percent; Lake Michigan, 27 percent; Lake Huron, 40 percent; and Lake Erie, 4 percent, of the total phosphorus loading for each lake.[1]

Of even greater significance were the atmospheric inputs of potentially toxic materials. PCBs and lead were two examples of materials that were contributed to the Great Lakes in a significant amount by atmospheric deposition.[2] Substantial quantities of air pollutants entering the Great Lakes water can be attributed to fugitive emissions from industrial activity.

1.2 DEFINITION OF FUGITIVE EMISSIONS

The term "fugitive emission", as used in this report, includes particulate emissions from industry-related operations that escape to the atmosphere without passing through a primary exhaust system such as a stack, flue, or control system.[3] This includes emissions from manufacturing operations; loading, unloading, and transporting of materials; storage piles; and other industrial processes where particulates escape to the atmosphere. As distinguished from fugitive emissions, "fugitive dust" includes natural dust, agricultural, and other non-industry activities (e.g., unpaved roads, commercial construction sites, etc.). Because fugitive emissions are not emitted from a definable point, they cannot be easily measured by conventional techniques. Therefore, their emissions and subsequent impacts on air and water quality are extremely difficult to estimate.

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[1] Environmental Quality, Council on Environmental Quality, December, 1979.

[2] Ibid.

1.3 APPROACH

Pacific Environmental Services, Inc. (PES) was contracted by the U.S. Environmental Protection Agency (U.S. EPA) Region V to provide technical expertise and assistance to conduct a fugitive emission inventory of industrial sources within the Region V states which potentially impact the water quality of the Great Lakes Basin.

PES established the following four tasks in the performance of this project:

1. Identification of Industrial Fugitive Emissions
2. Quantification and Characterization of the Fugitive Particulates
3. Identification of the Causal Relationship Between the Categorized Emissions and Water Quality
4. Development of a Methodology to Obtain and Quantify Unavailable Emission Inventory Data

All of the data in this report are based on the 1978 emissions inventory from each state in EPA Region V, which were the only up-to-date and complete emission inventories available at the time of project initiation.

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[3] Venditti, F.R., J.A. Armstrong, and Mr. Durham. Symposium on the Utilization of Particulate Technology - Volume 4 - Fugitive Dusts and Sampling Analysis, and Characterization of Aerosols. EPA-600/7-79-044d. February, 1979.

2.0 CONCLUSIONS AND RECOMMENDATIONS

2.1 CONCLUSIONS

This report was the result of a limited-scope preliminary study of particulate fugitive emissions from major industrial sources located within the six states of EPA Region V. For the purposes of this report, a major source is defined as a source which has a potential to emit 100 tons/yr of particulate matter. Also, most emission rates quoted are within a wide range, since fugitive emission factors are currently presented in this manner. This study revealed that approximately 229,000 to 531,000 tons of fugitive particulates were deposited into the Great Lakes during 1978 by major industrial sources located in the Region V states. These estimates represent approximately 95 to 220 percent of the total controlled particulate emissions (about 240,000 tons) from point sources located at the same industrial sites. The largest fugitive emission source bordering the lakes is the iron and steel industry. Large industrial cities such as Chicago, Gary, Cleveland, Toledo, Detroit, and Milwaukee were found to have the largest concentration of major fugitive emission sources.

Once these fugitive emissions reach the lake, they could conceivably increase the total solids in the water causing purification problems for public and industrial water supplies. Some of the particulates are soluble in water, and secondary reactions are likely to occur. Another EPA sponsored study showed that 60 percent of the total lead (Pb) input, 30 percent of the zinc (Zn) input, and 20 percent of the iron (Fe) input to the southern basin of Lake Michigan is attributed to dry deposition of atmospheric aerosol.[4] It was also found that major inputs of sulfate and nitrate are by dry loading. Phosphorus input by dry loading is about equal to precipitation inputs.

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[4] An Experimental Study of Lake Loading by Aerosol Transport and Dry Deposition in the Southern Lake Michigan Basin. EPA-905/4-79-016, July, 1979.

Since the chemical compositions of the majority of the fugitive particulates are unknown at this stage (in the absence of further study), it is difficult to estimate the total effects of fugitive emission deposition on the water quality.

Some processes do emit toxic material to the atmosphere as fugitive emissions, but their quantity and character are unknown. Many of the primary and secondary reactions between the water and these toxic materials are also unknown. The methodology used in conducting this study was the most efficient and accurate way to develop a major fugitive emission inventory realizing the funding and time constraints associated with this effort.

2.2 RECOMMENDATIONS

As stated previously, this study comprised a necessary first step of developing an industrial fugitive emission inventory; further demonstration and verification of the water quality impact from fugitive emissions should continue to be pursued. In addition, further study is needed in the following areas:

- extension of this study to include Region II and Region III states and portions of Canada which border the Great Lakes;
- verification of fugitive emissions;
- determination of the environmental impact from fugitive emissions by process type;
- quantification of area source impacts on water quality;
- determination of chemical composition of fugitive emissions;
- extension of this study to include non-traditional Fugitive Emission Sources.

Recommendations for further studies are described in Section 6.0.

3.0 METHODOLOGY

An industrial process fugitive emission inventory was developed to determine the potential fugitive particulate emissions from major stationary sources within a five-mile radius of the Great Lakes shoreline. This inventory was based on fugitive particulate emissions associated with actual annual throughput of each of the affected facilities. A detailed description of this methodology is provided below. The flowchart of this methodology is also shown in Figure 3-1.

3.1 IDENTIFICATION OF INDUSTRIAL FUGITIVE EMISSIONS SOURCES

The first task was to obtain 1978 emission inventories from each of the six states in the U.S. Environmental Protection Agency (U.S. EPA) Region V. The following state agencies were contacted: Illinois Environmental Protection Agency; Indiana Board of Health, Air Pollution Division; Michigan Department of Natural Resources; Minnesota Pollution Control Agency; Ohio Environmental Protection Agency; and Wisconsin Department of Natural Resources. The inventories were screened to include only those counties that border the Great Lakes (Figure 3-2), and were further screened to include only townships within five miles from the Great Lakes. With the aid of county maps, industrial point sources within five miles from the Great Lakes shoreline were identified. The five mile distance used for this inventory was prescribed by U.S. EPA project personnel. After the identification of the point source locations was completed, potential point sources were categorized by the nature of their size, and type of industrial process. Potential "major" sources with 100 tons per year or greater uncontrolled particulate emissions were chosen. Each permitted industrial process within the major source was classified as to whether or not fugitive particulate emissions may originate from it. The chosen point sources were then described by the following eight criteria:

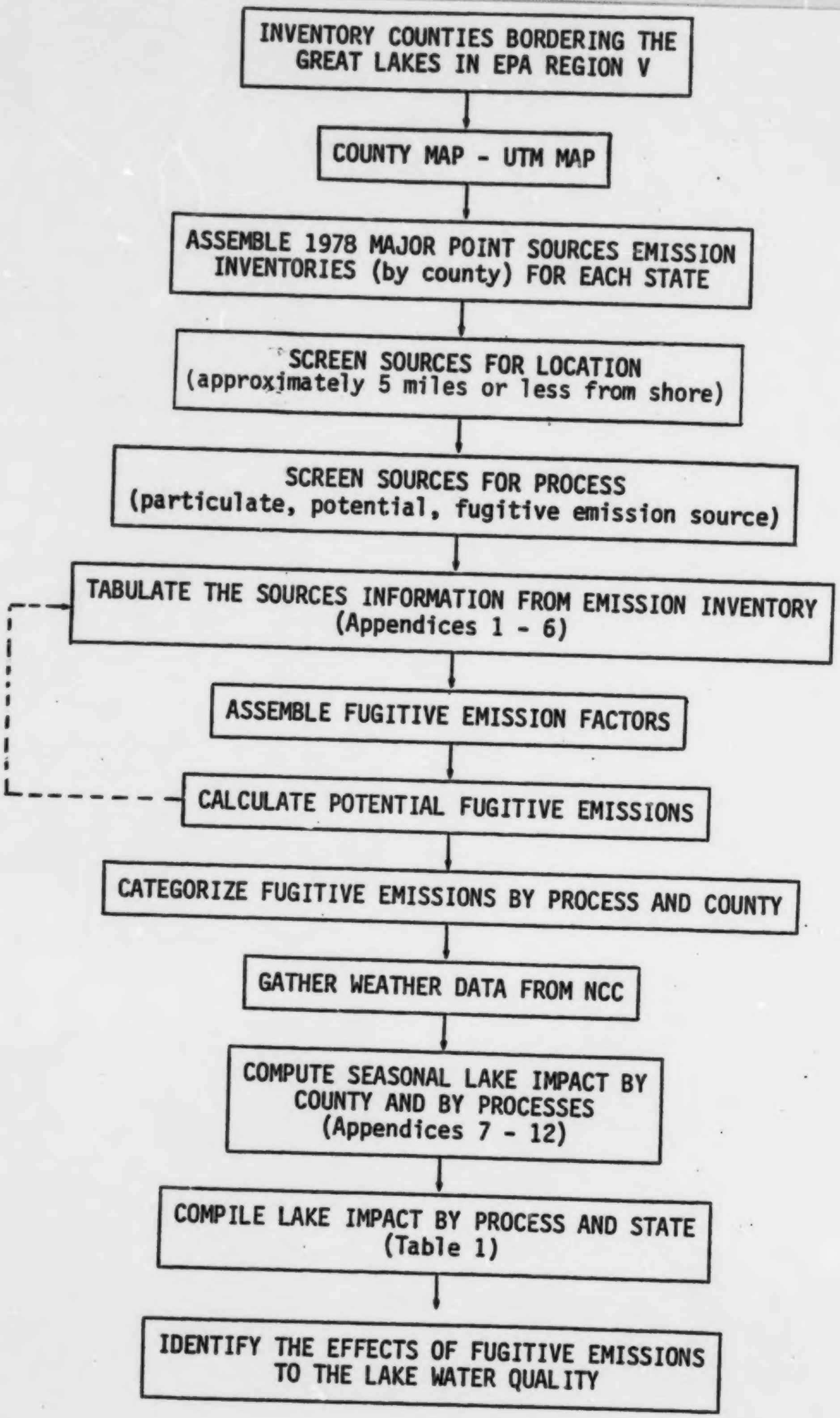

INVENTORY COUNTIES BORDERING THE GREAT LAKES IN EPA REGION V
COUNTY MAP - UTM MAP
ASSEMBLE 1978 MAJOR POINT SOURCES EMISSION INVENTORIES (by county) FOR EACH STATE
SCREEN SOURCES FOR LOCATION (approximately 5 miles or less from shore)
SCREEN SOURCES FOR PROCESS (particulate, potential, fugitive emission source)
TABULATE THE SOURCES INFORMATION FROM EMISSION INVENTORY (Appendices 1 - 6)
ASSEMBLE FUGITIVE EMISSION FACTORS
CALCULATE POTENTIAL FUGITIVE EMISSIONS
CATEGORIZE FUGITIVE EMISSIONS BY PROCESS AND COUNTY
GATHER WEATHER DATA FROM NCC
COMPUTE SEASONAL LAKE IMPACT BY COUNTY AND BY PROCESSES (Appendices 7 - 12)
COMPILE LAKE IMPACT BY PROCESS AND STATE (Table 1)
IDENTIFY THE EFFECTS OF FUGITIVE EMISSIONS TO THE LAKE WATER QUALITY

Figure 3-1. PROJECT METHODOLOGY

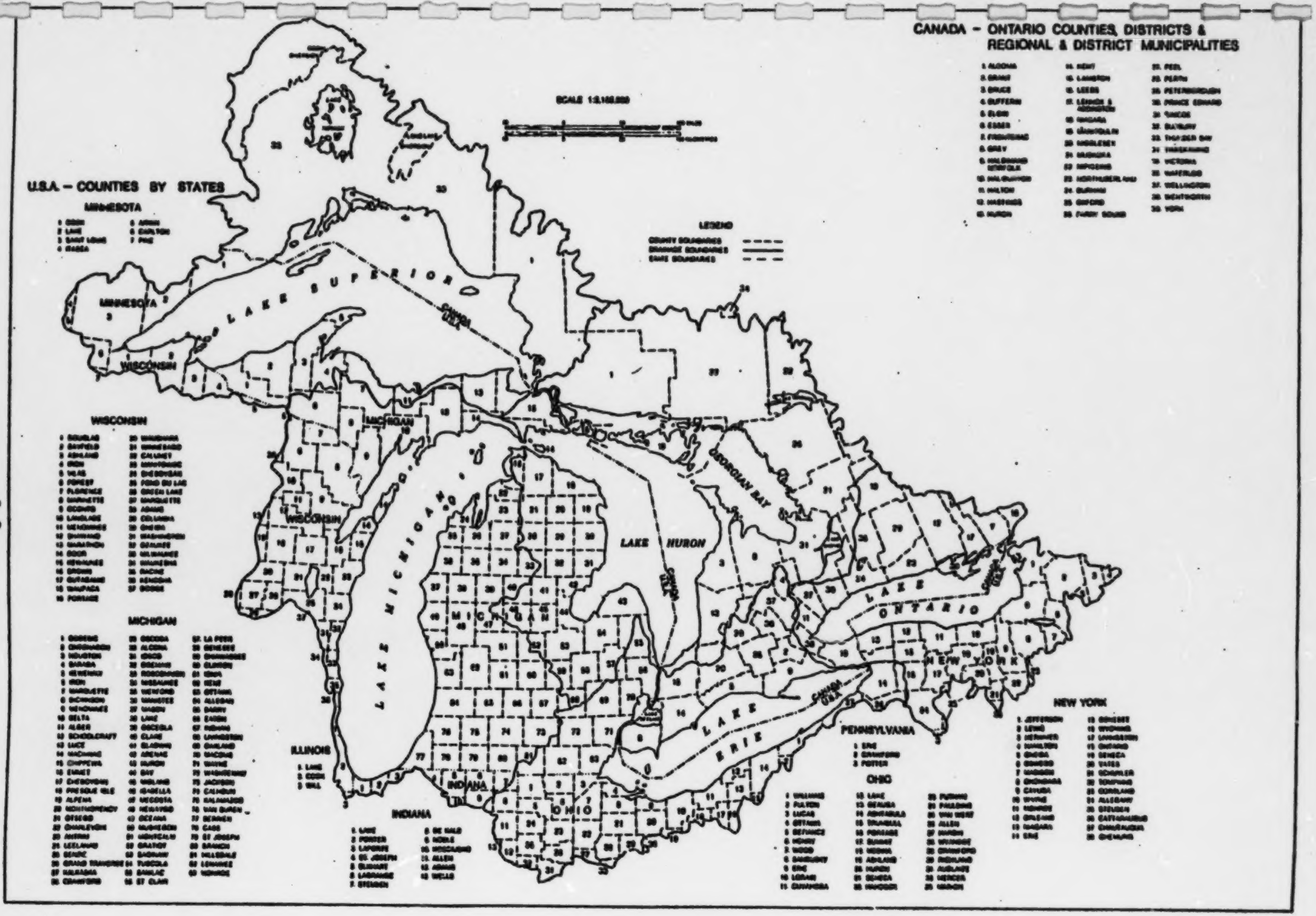

CANADA - ONTARIO COUNTIES, DISTRICTS & REGIONAL & DISTRICT MUNICIPALITIES
U.S.A. - COUNTIES BY STATES
MINNESOTA
WISCONSIN
MICHIGAN
ILLINOIS
INDIANA
OHIO
PENNSYLVANIA
NEW YORK
LEGEND
SCALE 1:3,168,000
LAKE SUPERIOR
LAKE MICHIGAN
LAKE HURON
GEORGIAN BAY
LAKE ERIE
LAKE ONTARIO
CANADA U.S.A.

Figure 3-2. COUNTIES BORDERING THE GREAT LAKES

Reproduced from "Environmental Management Strategy for the Great Lakes System", International Joint Council.

(1) Source I.D. - same number as state air pollution permit file;
(2) SIC Code - Standard Industrial Classification Code;
(3) Annual Process - 1978 annual throughput for that source;
(4) Controlled Point Source Emissions - actual emissions from that source;
(5) Potential Fugitive Emissions - estimated fugitive emissions from that source;
(6) Particle Size - average size of the fugitive particulate;
(7) Operation Schedule - seasonal operation frequency (percent); and
(8) Process Description - short process description

Except for Items (5) and (6), all information was available directly from the emission inventory computer printouts supplied by each state. Appendices A through F list the fugitive source inventories by state.

3.2 QUANTIFICATION OF THE FUGITIVE PARTICULATE EMISSION RATE

The potential fugitive emission rate was calculated using emission factors for industrial process fugitive particulate emission sources available in "Compilation of Air Pollutant Emission Factors," Publication Number AP-42; "Technical Guidance for Control of Industrial Process Fugitive Particulate Emissions," March, 1977 - EPA-450/3-77-010; and "Particulate Emission Factors Applicable to the Iron and Steel Industry," September, 1979 - EPA-450/4-79-028. Whenever possible, emission factors from AP-42 were used. Table 3-1 lists the fugitive emission factors which were used in this report. The majority of the emission factors have reliability ratings of "D" (below average-supportable by limited test data and engineering judgment), and "E" (poor-supportable by best engineering judgment). Factors with an "E" rating are at best within an order of magnitude and therefore, actual emission rates from a given facility could differ significantly. Because fugitive emissions are not emitted from a definable point, they cannot be easily measured, and are therefore difficult to estimate.

The estimated annual fugitive emission rate for a source with control equipment and/or a stack was calculated by multiplying the fugitive emission factor for that particular source by the source

Table 3-1. FUGITIVE EMISSION FACTORS

Source	Uncontrolled Fugitive Emission Factor (lb/ton)	Emission Factor Reliability Rating
COKE MANUFACTURING (Technical Guidance for Control of IPFPE)*		
Coal Unloading	0.4	E
Coal Storage	0.33	D
Coal Conveying & Transfer	0.04-0.96	E
Coal Charging	1.0-10.0	C
Coking (door leaking)	0.4-0.9	C
Quenching	1.2	C
Coke Handling	0.023-0.13	E
IRON PRODUCTION (Technical Guidance for Control of IPFPE)		
Shipping or Railroad Car Unloading:		
Iron Ore	0.02-0.03	E
Limestone	0.2	E
Iron Ore Storage	0.33	D
Iron Ore Handling & Transfer	2.0	D
Limestone Handling & Transfer	0.2	D
Blast Furnace Flue Dust Handling	0.3	E
Sinter Handling	1.27-3.65	E
Slag Handling	2.02-2.1	C
STEEL PRODUCTION (Technical Guidance for Control of IPFPE)		
Molten Pig Iron Transfer	0.056-0.25	D
Basic Oxygen Furnace	1.15-1.2	D
Open Hearth Furnace	0.1-0.39	D
Electric Arc Furnace	0.236-3.25	C
Ingot Casting	0.028-0.12	E
Molten Steel Reladling	0.028-0.12	E
Scarfing	0.011	C
PRIMARY COPPER SMELTING (AP-42)		
Roasting	23.00	--
Reverberatory Smelting Furnace	8.5	--
Converter	10.50	--
Fire Refining Furnace	1.90	--

*Industrial Process Fugitive Particulate Emissions

Table 3-1. FUGITIVE EMISSION FACTORS (Continued)

Source	Uncontrolled Fugitive Emission Factor (lb/ton)	Emission Factor Reliability Rating
SECONDARY ALUMINUM PRODUCTION (Technical Guidance for Control of IPFPE)		
Sweating Furnace	0.72	E
Smelting Furnace (Reverberatory)	0.94	E
Smelting Furnace (Crucible)	0.09	E
Smelting Furnace (Induction)	0.09	E
SECONDARY LEAD SMELTING (Technical Guidance for Control of IPFPE)		
Sweating Furnace	1.6-3.5	E
Reverberatory Furnace	2.8-15.7	E
Blast or Cupola Furnace	12.0	E
Casting	0.44	C
SECONDARY ZINC SMELTING (Technical Guidance for Control of IPFPE)		
Reverberatory Furnace	Negligible-1.3	E
Kettle Sweat Furnace	0.56	E
Rotary Sweat Furnace	0.56-1.26	E
Muffle Sweat Furnace	0.54-1.6	E
Electric Resistance Sweat Furnace	0.5	E
Crucible Melting Furnace	0.005	E
Kettle Melting Furnace	0.005	E
Reverberatory Furnace	0.005	E
Electric Induction Melting Furnace	0.005	E
FOUNDRIES (Technical Guidance for Control of IPFPE)		
Raw Material Receiving & Storage	0.74	E
Cupola Furnace Operation	0.1-2	E
Crucible Furnace Operation	0.1-0.6	E
Electric Arc Furnace	5.0-10 (metal charged) 1.05-3.48 (steel charged)	E
Open Hearth Furnace	0.1-0.9	E
Electric Induction Furnace	2.0 (metal charged) 1.5 (iron charged)	E E

Table 3-1. FUGITIVE EMISSION FACTORS (Continued)

Source	Uncontrolled Fugitive Emission Factor (lb/ton)	Emission Factor Reliability Rating
	FOUNDRIES (Continued)	
Pot Furnace	0.4	E
Reverberatory Furnace	8.3-8.7	E
Pouring Molten Metal Into Molds	0.1-4.13 (gray iron foundry)	E
	2.52 (copper)	E
	0.93 (lead)	E
Casting Operation	1.37-13.61	E
Core Making	0.71-6.08	E
Sand Handling	1.37	E
	MATERIAL EXTRACTION AND BENEFICATION (Technical Guidance for Control of IPFPE)	
Unloading, Transfer, Crushing	2.17-4.06	E
	TERMINAL GRAIN ELEVATOR (Technical Guidance for Control of IPFPE)	
Grain Handling (transfer, conveying, screening, cleaning, drying, shipping)	1.84-26.7	E
	CEMENT MANUFACTURING (Technical Guidance for Control of IPFPE)	
Cement Manufacturing	10.6-18.3	E
	LIME MANUFACTURING (Technical Guidance for Control of IPFPE)	
Lime Manufacturing	3.14-3.186	E
	CONCRETE BATCHING (AP-42)	
Transfer of Sand & Aggregate to Elevated Bins	0.04	--

Table 3-1. FUGITIVE EMISSION FACTORS (Concluded)

Source	Uncontrolled Fugitive Emission Factor (lb/ton)	Emission Factor Reliability Rating
CONCRETE BATCHING (Continued)		
Cement Unloading to Elevated Storage Silos	0.24	--
Weight Hopper Loading of Cement, Sand Aggregate	0.02	--
Mixer Loading of Cement, Sand Aggregate	0.04	--
Loading of Transit Mix Truck	0.02	--
Loading of Dry Batch Truck	0.04	--
ASPHALT CONCRETE (Technical Guidance for Control of IPFPE)		
Concrete Manufacturing	8.656	E
WOODWORKING OPERATION (AP-42)		
Wood Waste Storage Bin Vent	1.0	--
Wood Waste Storage Bin Loadout	2.0	--
Sawing and Sawdust Pile	1.35	E

annual throughput, and converted to tons per year. For instance, the potential fugitive emission rate for a primary copper smelter having an annual production rate of 1,000 ton/year is:

$$\left(\frac{43.9 \text{ lbs of particulate}}{\text{ton of end product}}\right)^{*}\left(\frac{1{,}000 \text{ ton/year}}{2{,}000 \text{ lbs/ton}}\right) = 22 \text{ tons particulate/year}$$

*Fugitive emission factor AP-42, page 7.3-7.

A source with no control equipment and stack was considered as a fugitive emission source and the fugitive emission rate was recorded as the "uncontrolled emission rate" found on the process emission inventory printout.

3.3 ESTIMATION OF FUGITIVE EMISSION IMPACTS TO THE LAKES

Table 3-2 was used to determine the seasonal fugitive emissions impact to the lakes. This table contained the following information:

- state
- county
- process description
- SIC Code
- total potential fugitive emission rate within the county
- total potential lake impact from the county
- particle size
- seasonal fugitive emission rate
- wind frequency impact on lake
- the seasonal lake impact

This table was completed as follows:

A total estimated fugitive emission rate per process, regardless of source, within the county was calculated by adding each fugitive emission rate estimated for that process (i.e., potential fugitive emissions for each coal storage process within Cook County, Illinois and within five miles of the Lake Michigan shoreline). A total potential fugitive emission rate describing this

STATE OF: COUNTY:

SIC: PROCESS DESCRIPTION:

POTENTIAL FUGITIVE EMISSIONS (tons/yr): POTENTIAL LAKE IMPACT (tons/yr):

PARTICLE SIZE:

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS				
WIND FREQUENCY (% impact on lake)				
SEASONAL IMPACT (tons)				

SIC: PROCESS DESCRIPTION:

POTENTIAL FUGITIVE EMISSIONS (tons/yr): POTENTIAL LAKE IMPACT (tons/yr):

PARTICLE SIZE:

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS				
WIND FREQUENCY (% impact on lake)				
SEASONAL IMPACT (tons)				

Table 3-2. CALCULATION SHEET TO DETERMINE THE SEASONAL FUGITIVE EMISSIONS IMPACT TO THE LAKES

process category was calculated by adding each coal storage emission rate within a particular county. Seasonal fugitive emission rates for each process were then computed by multiplying each process's potential fugitive emissions with its respective seasonal operation schedule, which was obtained from state emission inventories. Only the State of Michigan Emission Inventory did not provide this kind of information. In order to complete this study, PES assumed an equal operation schedule year round, i.e., 25/25/25/25 for all of Michigan's industrial sources.

Since the pollution dispersion directions were determined by the prevailing wind direction for each area in this study, local climatological data (LCD) obtained from the National Climatic Center, Asheville, North Carolina, were used to determine the prevailing wind directions at all locations surrounding the Region V Great Lakes. A sample LCD is given in Table 3-3 for Green Bay, Wisconsin. A list of the stations in which climatological data was obtained is given in Table 3-4. The prevailing winds for each location was used to determine the seasonal impact on the Great Lakes for fugitive emission sources. This was accomplished by determining the prevailing winds at each station for each month and comparing them to each source location to determine whether the source would impact on the lake under study. The percent frequency of winds blowing towards each lake (wind positive) was then determined on a seasonal basis from this monthly information (December through February, March through May, June through August, and September through November). The seasonal impacts were calculated by multiplying the seasonal fugitive emissions from each source by the seasonal wind positive data. The results of lake impacts for each state and county are listed in Appendices G through L. The reliability of these results are also discussed in Section 4.0.

An attempt was made to characterize the fugitive emissions with respect to particle size. Typical particle size ranges for the emissions correspond to those used in "Technical Guidance for Control of Industrial Process Fugitive Particulate Emissions," Publication No. EPA - 450/3-77-010.

Table 3-3. LOCAL CLIMATOLOGICAL DATA SUMMARIES (LCD) FOR GREEN BAY, WISCONSIN

Station: GREEN BAY, WISCONSIN AUSTIN STRAUBEL FIELD Standard time used: CENTRAL Year: 1979

† DATA CORRECTED AFTER PUBLICATION OF THE MONTHLY ISSUE.

Normals, Means, And Extremes

Means and extremes above are from existing and comparable exposures. Annual extremes have been exceeded at other sites in the locality as follows: Highest temperature 104 in July 1936; lowest temperature -36 in January 1888; maximum monthly precipitation 9.38 in May 1918; minimum monthly snowfall 38.1 in March 1888; maximum snowfall in 24 hours 22.0 in January 1888.

(a) Length of record, years, through the current year unless otherwise noted, based on January data.
(b) 70° and above at Alaskan stations.
* Less than one half.
T Trace.

NORMALS - Based on record for the 1941-1970 period.
DATE OF AN EXTREME - The most recent in cases of multiple occurrence.
PREVAILING WIND DIRECTION - Record through 1963.
WIND DIRECTION - Numerals indicate tens of degrees clockwise from true north. 00 indicates calm.
FASTEST MILE WIND - Speed is fastest observed 1-minute value when the direction is in tens of degrees.

Reproduced from best available copy.

Table 3-4. WEATHER STATIONS (BY COUNTY)

STATE: Illinois

Weather Station: Midway Airport (Chicago, Illinois)
County: Cook, Lake

STATE: Indiana

Weather Station: Midway Airport (Chicago, Illinois)
County: Lake, Porter

STATE: Michigan

Weather Station: Phelps Collins Field (Alpena, Michigan)
County: Presque Isle

Weather Station: City Airport (Detroit, Michigan)
County: Macomb, Monroe, Wayne

Weather Station: Bishop Airport (Flint, Michigan)
County: Arenac, Bay, Huron

Weather Station: U.S. Post Office (Marquette, Michigan)
County: Alger, Delta, Marquette, Schoolcraft

Weather Station: Muskegan County Airport (Muskegon, Michigan)
County: Berrien, Mason, Muskegon, Ottawa

Weather Station: Suburban Office (Sault Ste. Marie, Michigan)
County: Chippewa, Mackinac

Weather Station: International Airport (Duluth, Minnesota)
County: Ontonagon

Weather Station: Austin Straurel Field (Green Bay, Wisconsin)
County: Monominee

Table 3-4 (Concluded)

STATE: Minnesota

Weather Station: International Airport (Duluth, Minnesota)
County: Lake, St. Louis

STATE: Ohio

Weather Station: Toledo Express Airport (Toledo, Ohio)
County: Lucas, Ottawa

Weather Station: Cleveland Hopkins Int'l Airport (Cleveland, Ohio)
County: Ashtabula, Cuyahoga, Erie, Lorain, Lake

STATE: Wisconsin

Weather Station: Austin Straurel Field (Green Bay, Wisconsin)
County: Door, Kewaunee, Marinette, Manitowoc

Weather Station: General Mitchell Field (Milwaukee, Wisconsin)
County: Kenosha, Milwaukee, Racine, Sheboygan, Ozaukee

Weather Station: International Airport (Duluth, Minnesota)
County: Douglas

4.0 INVENTORY RESULTS AND DISCUSSION

This section summarizes the results of the fugitive emissions study on a lake-by-lake basis. It also interprets the relationships between the associated state (or states) and the major fugitive emission processes. Within U.S. EPA Region V jurisdiction, approximately 48 percent of the counties (29 out of a total of 60) surrounding the Great Lakes are designated as "partial county non-attainment areas" with respect to TSP (see Figures 4-1 through 4-6). Table 4-1 shows the summary of yearly fugitive emission impacts on each lake. Since most current fugitive emission factors for industrial sources have ranges associated with them, the study results presented in Table 4-1 reflect these ranges. These ranges provide only an estimate of potential emissions, since proper control of fugitive emission points could significantly reduce any or all of the resultant emission rates. As stated in Section 3.3, this fugitive emission impact summary incorporates both potential fugitive emissions generated by each source, and the prevailing wind direction in the vicinity of the facility. In some states, potential fugitive emissions impact their bordering lakes greatly due to the prevailing wind directions (see Table 4-2). This study used seasonal wind averages for local climatological data summaries to project emission impacts to Great Lakes water quality. In a previous study,[1,2] four standard weather stations were involved in San Antonio, Texas. The average distance separating the stations was 12 miles, the direction data were given to 16 compass points, and the wind speed to 1 mph. These data indicated that 90 percent of the time wind direction between stations would differ by no more than three compass points and 90 percent of the time wind speed would differ by

[1] U.S. Weather Bureau, 1953: A Meteorological Survey of the Oak Ridge Area: Final Report Covering the Period 1948-1952. USAEC Report ORO-99, Weather Bureau, Oak Ridge, Tennessee.

[2] U.S. Atomic Energy Commission, 1968, Meteorology and Atomic Energy Office of Information Services.

ILLINOIS

TSP

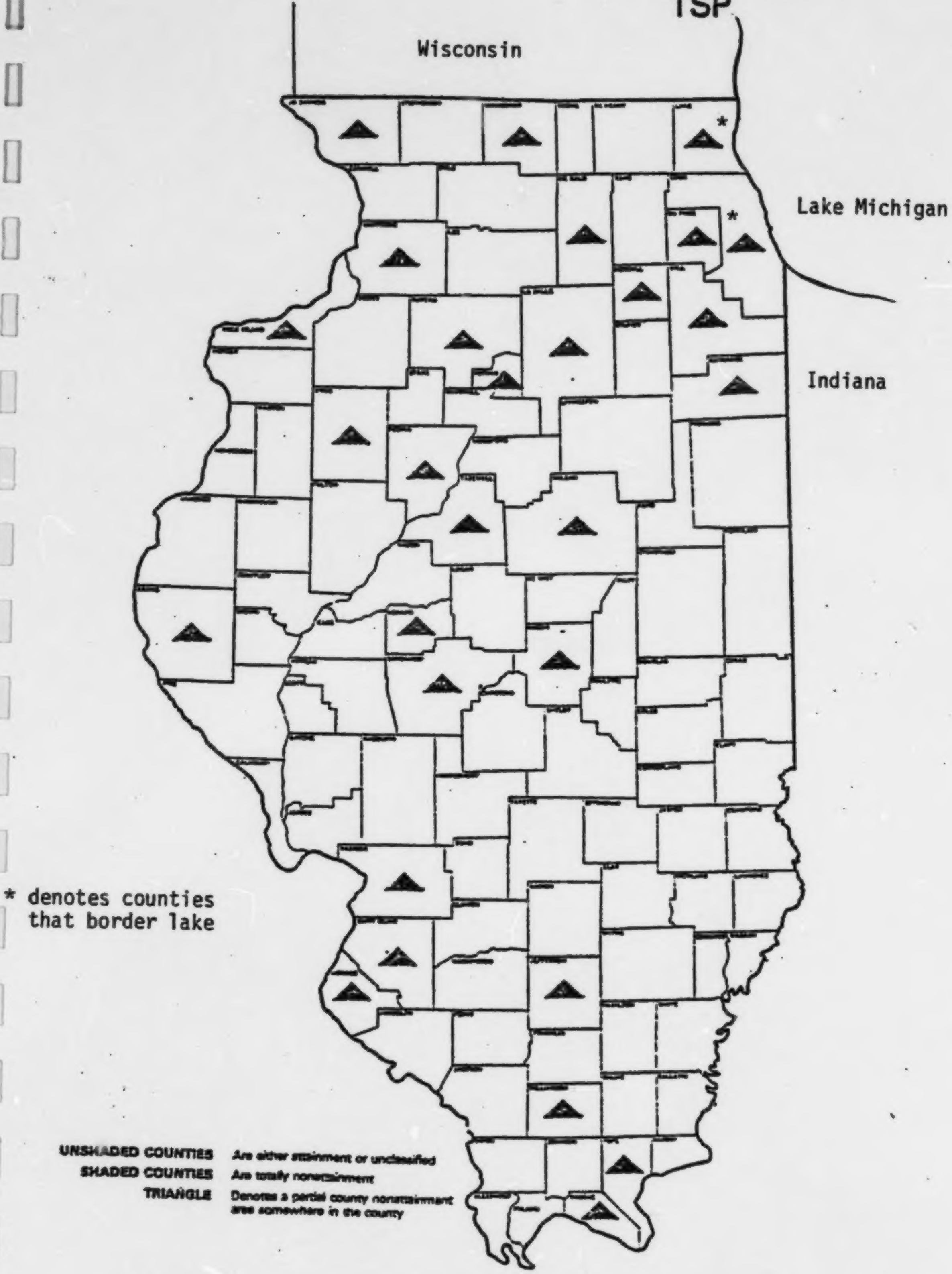

Wisconsin
Lake Michigan
Indiana
*
*
* denotes counties that border lake
UNSHADED COUNTIES Are either attainment or unclassified
SHADED COUNTIES Are totally nonattainment
TRIANGLE Denotes a partial county nonattainment area somewhere in the county

Figure 4-1. NON-ATTAINMENT AREA DESIGNATION MAP FOR STATE OF ILLINOIS

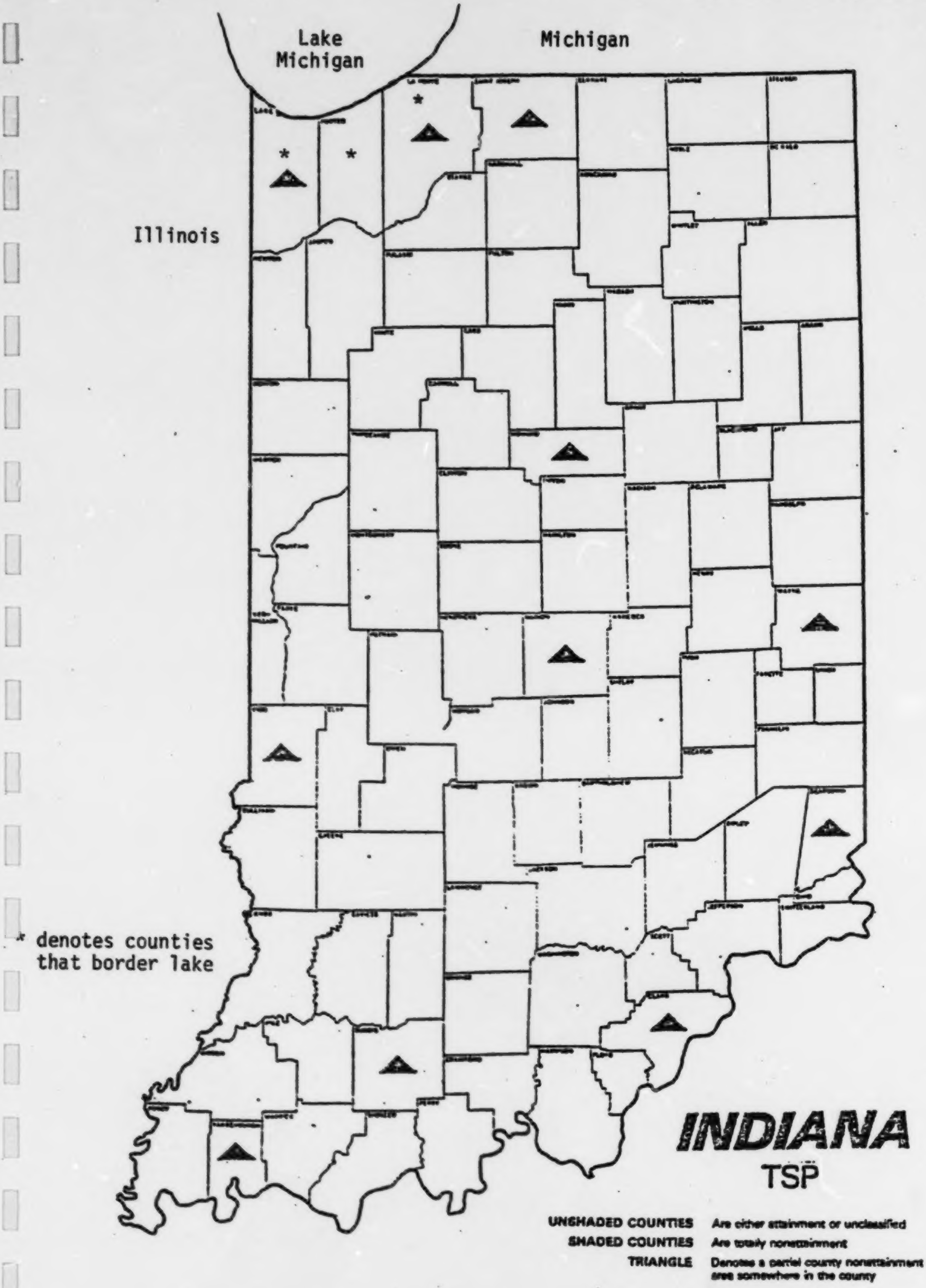
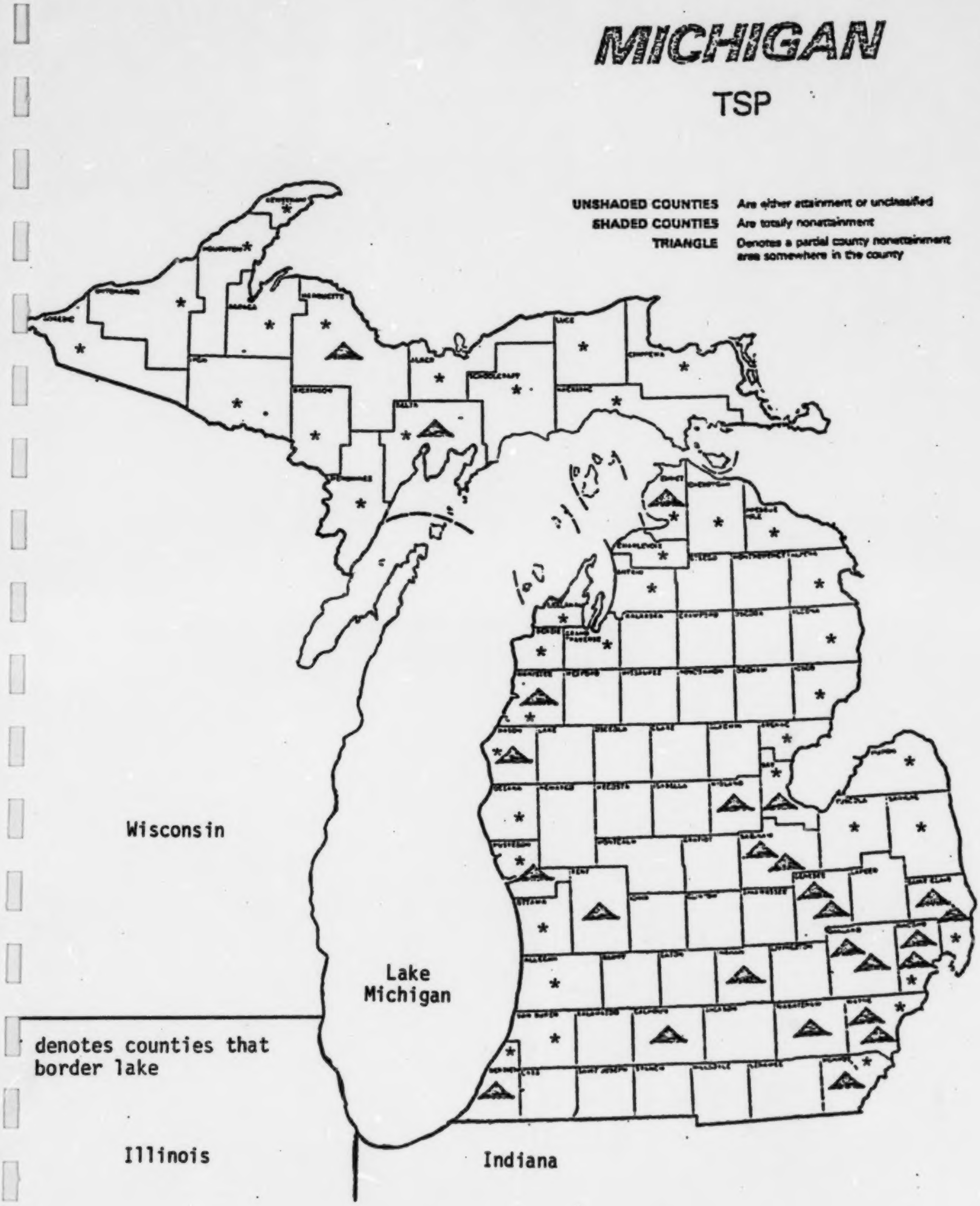

Lake Michigan
Michigan
Illinois
* denotes counties that border lake
INDIANA
TSP
UNSHADED COUNTIES Are either attainment or unclassified
SHADED COUNTIES Are totally nonattainment
TRIANGLE Denotes a partial county nonattainment area somewhere in the county

Figure 4-2. NON-ATTAINMENT AREA DESIGNATION MAP FOR STATE OF INDIANA



MICHIGAN

TSP

UNSHADED COUNTIES	Are either attainment or unclassified
SHADED COUNTIES	Are totally nonattainment
TRIANGLE	Denotes a partial county nonattainment area somewhere in the county

* denotes counties that border lake

Wisconsin
Lake Michigan
Illinois
Indiana
100

Figure 4-3. NON-ATTAINMENT AREA DESIGNATION MAP FOR STATE OF MICHIGAN

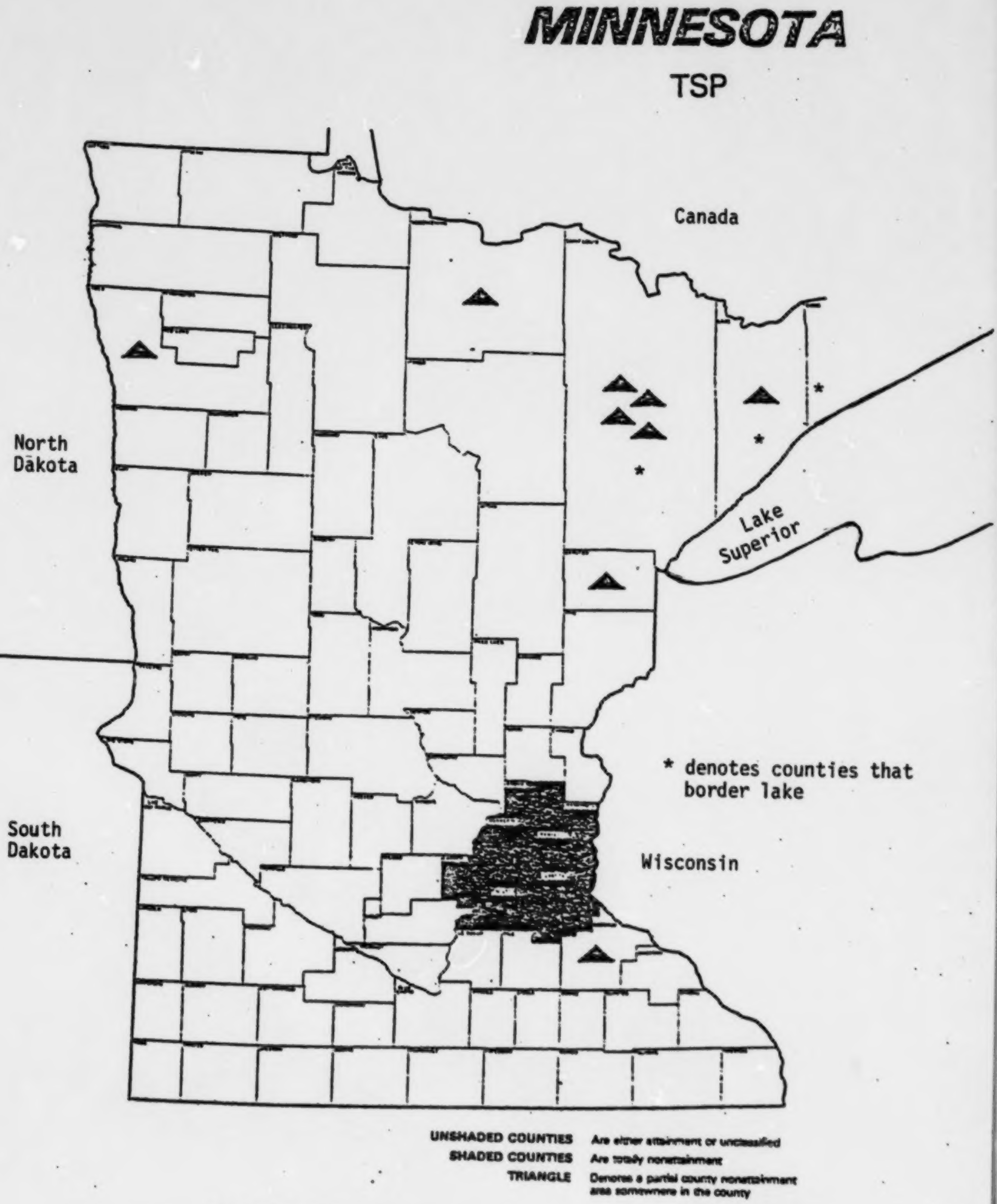

MINNESOTA
TSP
Canada
North Dakota
South Dakota
Wisconsin
Lake Superior
* denotes counties that border lake
UNSHADED COUNTIES Are either attainment or unclassified
SHADED COUNTIES Are totally nonattainment
TRIANGLE Denotes a partial county nonattainment area somewhere in the county

Figure 4-4. NON-ATTAINMENT AREA DESIGNATION MAP FOR STATE OF MINNESOTA

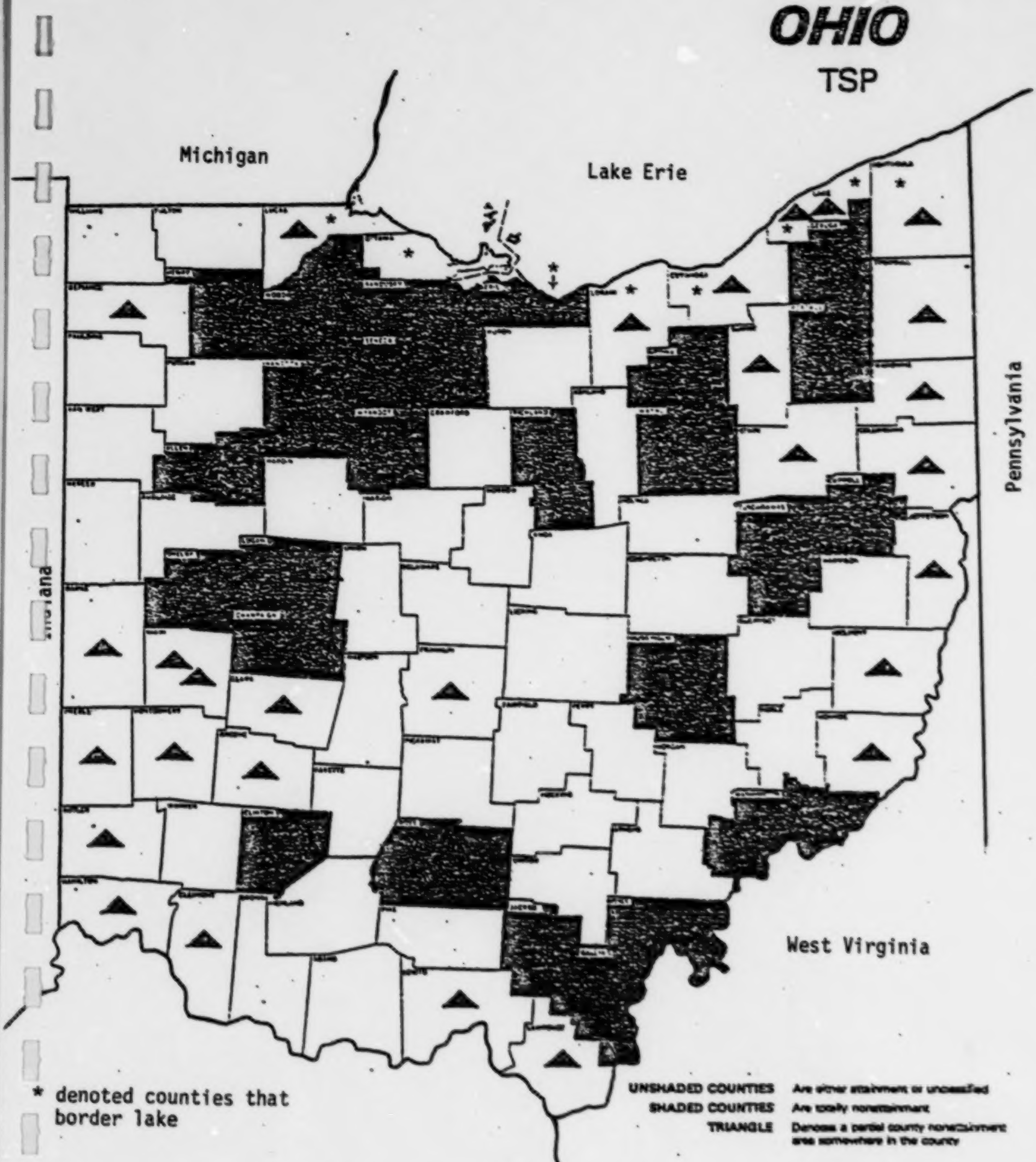
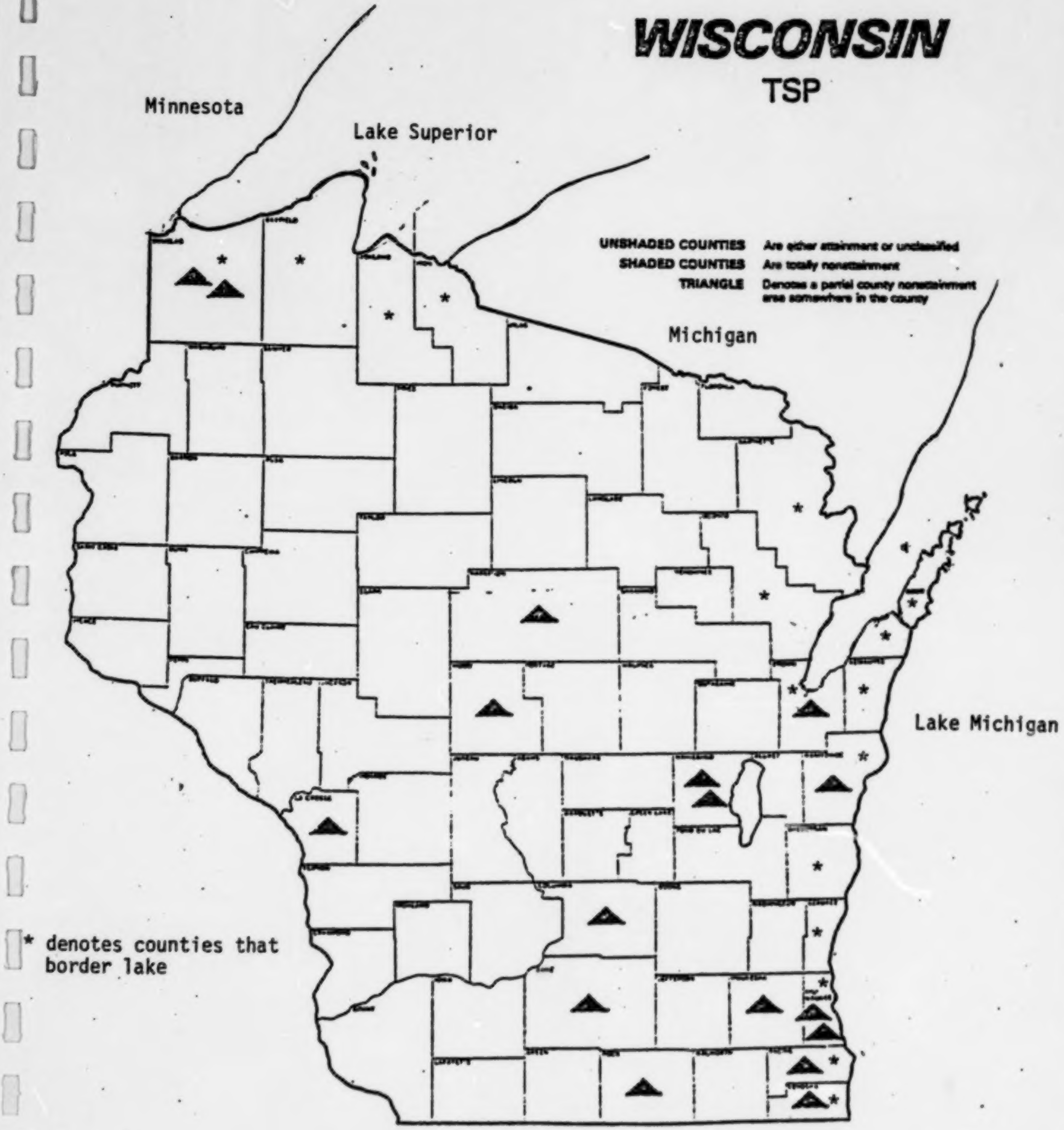

OHIO
TSP
Michigan
Lake Erie
Pennsylvania
Indiana
West Virginia
* denoted counties that border lake
UNSHADED COUNTIES Are either attainment or unclassified
SHADED COUNTIES Are totally nonattainment
TRIANGLE Denotes a partial county nonattainment area somewhere in the county

Figure 4-5. NON-ATTAINMENT AREA DESIGNATION MAP FOR STATE OF OHIO



WISCONSIN
TSP
Minnesota
Lake Superior
Michigan
UNSHADED COUNTIES Are either attainment or unclassified
SHADED COUNTIES Are totally nonattainment
TRIANGLE Denotes a partial county nonattainment area somewhere in the county
Lake Michigan

* denotes counties that border lake

Figure 4-6. NON-ATTAINMENT AREA DESIGNATION MAP FOR STATE OF WISCONSIN

Table 4-1. POTENTIAL INDUSTRIAL FUGITIVE IMPACTS INCORPORATING PREVAILING WIND EFFECTS

INDUSTRIAL PROCESS	POTENTIAL FUGITIVE EMISSION RATE (tons/yr)						SUBTOTAL (tons/yr)
	ILLINOIS	INDIANA	MICHIGAN	MINNESOTA	OHIO	WISCONSIN	
LAKE ERIE	NO IMPACT	NO IMPACT		NO IMPACT		NO IMPACT	
1. Iron Melting			3100-3700		5600		8700-9300
2. Coal Storage			2700-5500		4100-8500		6800-14000
3. Coking Process			4000		2700		6700
4. Lime Manufacturing			540-730		5600		6100-6300
5. Grain Handling			440-1000		3000-40000		3400-42000
6. Steel Melting			2000		950		2900
7. Iron Foundry & Cleaning			370-2400		2200-14000		2600-17000
8. Cement Manufacturin			1700		----		1700
9. Gypsum Manufacturin			1200		300		1500
10. Sintering			520-1500		100-400		500-1900
11. Stone Crushing			330		43-63		370-390
12. Asphalt Batching			47		50		97
13. Brass Smelting			5		35		40
14. Aluminum Production			----		7		7
15. Lead Smelting			6		----		6
16. Concrete Batching			3		----		3
TOTAL			17000-24000		25000-79000		42000-103000
LAKE HURON	"	"		"	NO IMPACT	"	
1. Stone Crushing			7900				7900
2. Cement Manufacturin			900-1400				900-1400
3. Coal Storage			580-1200				580-1200
4. Foundry Cleaning			58-570				58-570
(con't)							

Table 4-1 (continued)

INDUSTRIAL PROCESS	POTENTIAL FUGITIVE EMISSION RATE (tons/yr)						SUBTOTAL (tons/yr)
	ILLINOIS	INDIANA	MICHIGAN	MINNESOTA	OHIO	WISCONSIN	
LAKE HURON (con't)							
5. Grain Handling	NO IMPACT	NO IMPACT	44-590	NO IMPACT	NO IMPACT	NO IMPACT	44-590
6. Iron Oxide Furnace			34-200				34-200
7. Concrete Batching			76				76
8. Lime Milling			36				36
9. Asphalt Batching			27				27
10. Zinc Smelting			18				18
TOTAL			9700-12000				9700-12000
LAKE SUPERIOR							
1. Iron Ore			----	20000		----	20000
2. Grain Handling			----	7400-100000		----	7400-100000
3. Stone Crushing			1400-2600	----		----	1400-2600
4. Coke Oven	"	"	----	850-970	"	----	850-970
5. Coal Storage			370-740	250-400		----	620-1200
6. Copper Smelting			970	----		----	970
7. Asphalt Batching			4	81		----	85
TOTAL			2700-4300	29000-121000			31000-130000
LAKE MICHIGAN							
1. Coking Process	2500	49000	----	NO IMPACT		390-1500	52000-53000
2. Coal Storage	26000-33000	1800-6500	230-540			1500-3000	29000-43000
3. Grain Handling	7800-72000	5900-19000	----		"	580-4100	14000-95000
4. Iron Production	4700-7600	7000	----			----	12000-15000
(con't)							

Table 4-1 (concluded)

INDUSTRIAL PROCESS	POTENTIAL FUGITIVE EMISSION RATE (tons/yr)						SUBTOTAL (tons/yr)
	ILLINOIS	INDIANA	MICHIGAN	MINNESOTA	OHIO	WISCONSIN	
LAKE MICHIGAN (con't)							
5. Steel Making	570-600	7100	3-7			410-1400	8100-9200
6. Mineral Handling	1800	380	4500-8300			19	6700-10000
7. Sintering	2200-3400	3900-11000	----			----	6100-15000
8. Lime Manufacturing	890	950	2300			680-700	4800
9. Iron Foundry Cleaning	1200-6200	860-7000	820-7300	NO IMPACT	NO IMPACT	1400-5800	4300-26000
10. Cement Manufacturing	280	3500-6000	----			250-410	4000-6700
11. Asphalt Batching	880	240	26			240	1400
12. Unpaved Road	1100	----	----			----	1100
13. Core Oven	180-220	----	7-59			510-4800	700-5000
14. Concrete Batching	120	450	7			----	580
15. Lead Smelting	6	340-950	----			12-63	360-1000
16. Brass Melting	190	45	----			29-130	260-360
17. Gypsum Manufacturing	65	190	----			----	250
18. Aluminum Production	5	200	----			14	200
19. Woodworking	62	----	----			2	64
20. Zinc Melting	18-46	9	----			6	33-61
TOTAL	50000-130000	82000-120000	7900-18000			6000-22000	150000-290000

Table 4-2. POTENTIAL LAKE IMPACT FROM INDUSTRIAL FUGITIVE EMISSIONS INCORPORATING PREVAILING WIND DIRECTION

STATE	POTENTIAL INDUSTRIAL FUGITIVE EMISSION (TPY)	% IMPACTING LAKE	FUGITIVE EMISSION IMPACTING LAKE (TPY)
Illinois	50,000-130,000	100%	50,000-130,000
Indiana	86,000-120,000	95%	82,000-110,000
Michigan	64,000-99,000	59%	38,000-60,000
Minnesota	38,000-160,000	75%	29,000-120,000
Ohio	26,000-86,000	92%	24,000-79,000
Wisconsin	25,000-90,000	24%	6,000-22,000

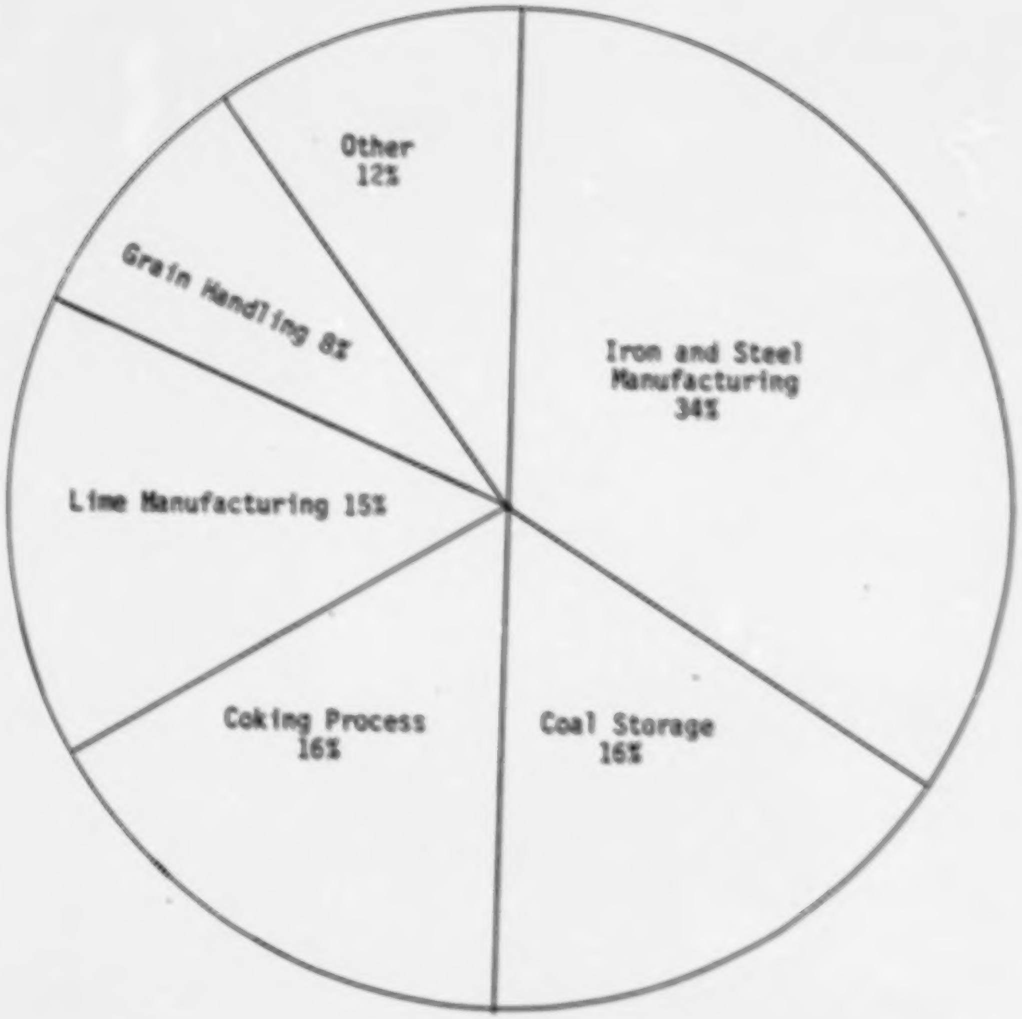
no more than 9 mph. Obviously, the shorter the distance from each individual source to the National Weather Service station, the greater the likelihood of similar meteorological measurement. Although this estimate of average wind directions is far from absolute, it yields an approximation of the magnitude of industrial emissions impacting the lake and provides an insight to the areas affecting lake quality the greatest.

4.1 LAKE ERIE

The results of this study show that 42,000 to 103,000 tons of industry generated fugitive particulate emission reached the Lake Erie shoreline during 1978. These emissions originated from the states of Ohio and Michigan, which border Lake Erie. As with all of the remaining lakes, only the impact of United States sources was studied. Ohio was the dominant state, emitting about 60 percent of the total fugitive emissions. Over 70 percent of those fugitive emissions originated from the following industries: iron melting, coal storage, coke production, lime manufacturing, and grain handling. The contribution percentage from those processes are shown in Figure 4-7.

In the state of Ohio, eight counties border Lake Erie: Ashtabula, Cuyahoga, Erie, Lake, Lorain, Lucas, and Ottawa. The majority of industries are concentrated in Cuyahoga and Lucas counties in which Cleveland and Toledo, two large industrial cities, are located. Fifty-four major sources were located in this study area, of which 50 percent were located in Cuyahoga County and 16 percent in Lucas County (see Appendix E). These sources were categorized under 13 different industrial processes, the largest being iron melting in Cuyahoga County. However, the fugitive emissions from iron melting had a large particle size--50 percent were greater than 70 microns; consequently, the actual fugitive emissions deposited in the lake may be less than estimated due to the particles increased settling velocity (i.e., particles may settle out prior to reaching shoreline). The estimated fugitive emissions impact on Lake Erie from the state of Ohio ranged between 25,000 and 79,000 tons per year.

Figure 4-7. PERCENTAGE OF FUGITIVE IMPACT BY PROCESS ON LAKE ERIE



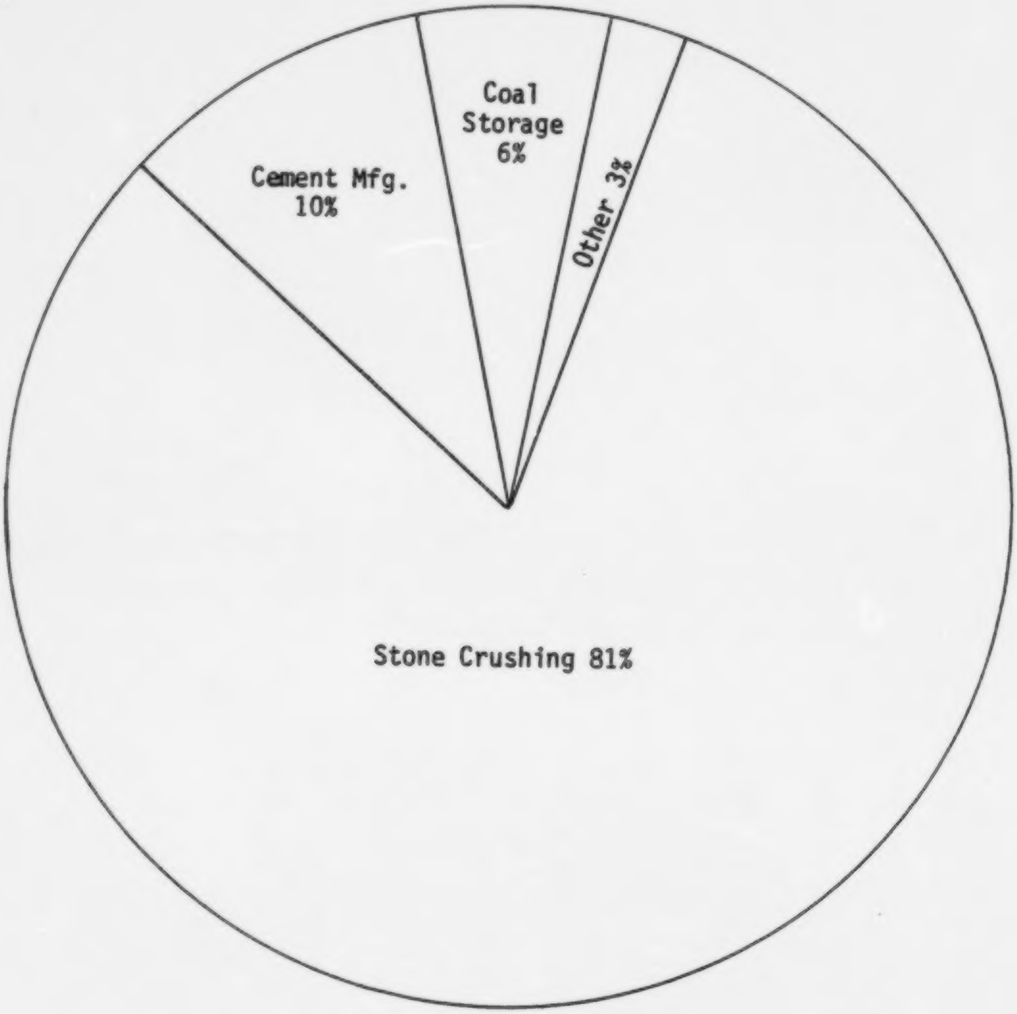
Macomb, Monroe, and Wayne Counties border Lake Erie in the state of Michigan. The major industrial area is located in Wayne County, which includes the city of Detroit. Most of the iron and steel industry are located outside of the five mile radius from the shoreline. The state of Michigan contributes fugitive emissions to Lake Erie and Lake St. Clair. For the purposes of this study, they were treated as one lake since the two lakes are connected by the Detroit River. A total of 43 Michigan sources impact Lake Erie (see Appendix C), 90 percent of which are located in Wayne County. These sources were categorized under 15 different industrial processes, the largest being the coking processes located in Wayne County. The estimated fugitive emissions impact to Lake Erie from the state of Michigan ranged from 17,000 to 24,000 tons per year.

4.2 LAKE HURON

This study determined that there were 9,700 to 12,000 tons of fugitive emissions impacting Lake Huron during 1978. Within the jurisdiction of EPA Region V, only the state of Michigan borders Lake Huron. Within Michigan, the following 11 counties border Lake Huron: Bay, Arenac, Huron, Presque Isle, St. Clair, Sanilca, Iosco, Alcona, Alpena, Tuscola, and Sheboygan. Only the first four counties have major fugitive emission sources, with Bay County as the major contributor of fugitive emissions to the lake. The remaining counties consist of rural areas having few major industrial sources.

There were a total of 27 sources subject to this study, which were categorized under ten different industrial processes. The largest fugitive emission process was the stone crushing process, which contributed approximately 8,000 tons of fugitive particulates to Lake Huron. The fugitive emission contribution percentage by process is shown in Figure 4-8.

Figure 4-8. PERCENTAGE OF FUGITIVE IMPACT BY PROCESS ON LAKE HURON



4.3 LAKE SUPERIOR

During 1978 there were 31,000 to 130,000 tons of fugitive emissions deposited in Lake Superior. Within EPA Region V jurisdiction, the states of Michigan, Wisconsin and Minnesota border Lake Superior.

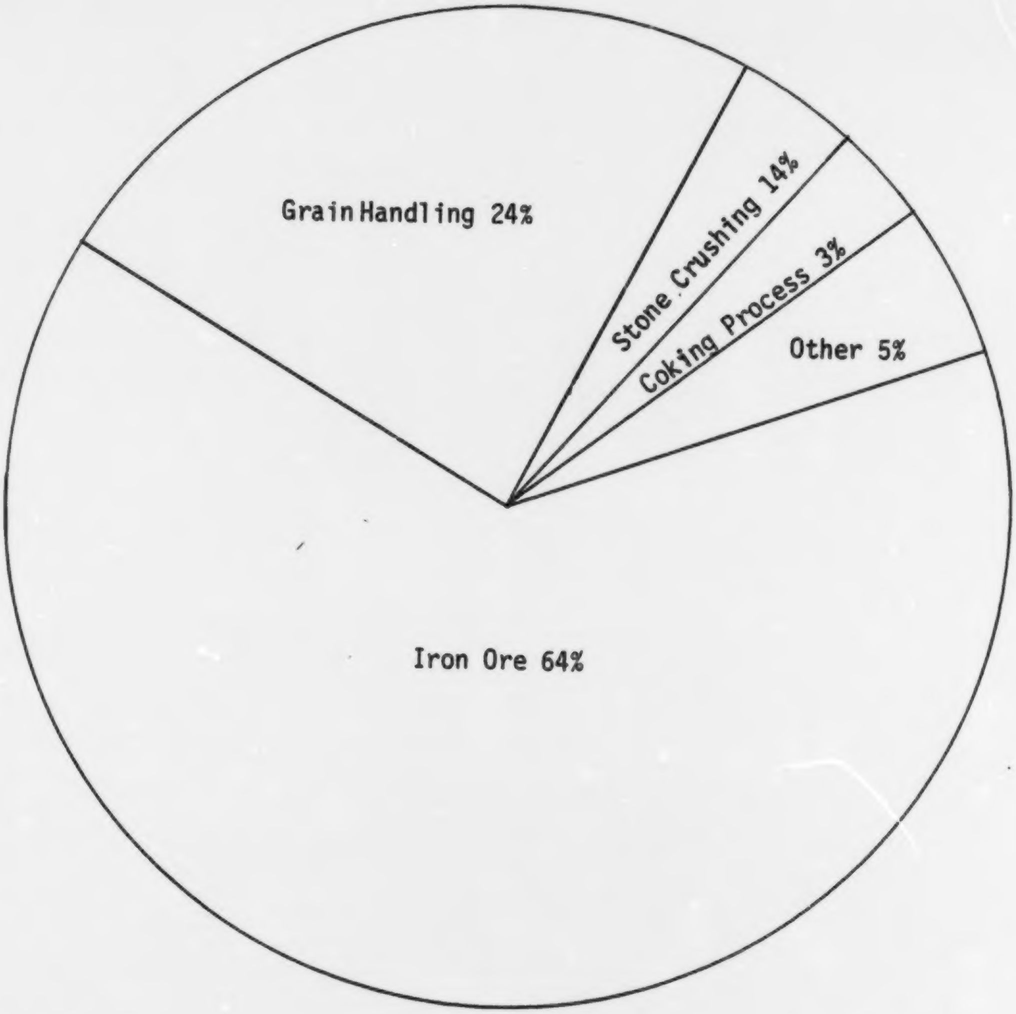
Within the state of Michigan, the following eight counties border Lake Superior: Chippewa, Luce, Alger, Marquette, Baraga, Keweenaw, Houghton, Ontonagon, and Gogebic. All of these counties are considered rural areas and have a relatively small impact on the lake.

There were ten Michigan sources subject to this study, which were categorized into four industrial processes. Stone crushing was the largest fugitive emission process. Industrial process fugitive emission contribution percentages are shown in Figure 4-9. The total Michigan fugitive emission annual impact to Lake Superior ranged between 2,700 and 4,300 tons.

Within the state of Minnesota, the three counties bordering Lake Superior are St. Louis, Lake, and Cook. The major industrial area is concentrated in Duluth, located in St. Louis County. There are a total of 13 Minnesota industrial fugitive sources impacting Lake Superior which were categorized under five industrial processes. The largest process contributing fugitive emissions was iron ore operations, which emitted over 20,000 tons per year. The second largest was grain handling, emitting over 8,000 tons per year. The annual fugitive emissions impact to Lake Superior ranged between 29,000 and 124,000 tons.

Within the state of Wisconsin, the four counties bordering Lake Superior are Douglas, Bayfield, Ashland, and Iron. The major industrial area is concentrated in Douglas County, while the other three counties are considered rural areas. Potentially, there were 17,000 to 135,000 tons of fugitive emissions emitted from Douglas County, with the majority being emitted from grain handling operations. Since the local climatological data indicated that the prevailing wind direction was never in the lake direction, there was no fugitive emissions impact to Lake Superior from the state of Wisconsin.

Figure 4-9. PERCENTAGE OF FUGITIVE IMPACT BY PROCESS ON LAKE SUPERIOR



4.4 LAKE MICHIGAN

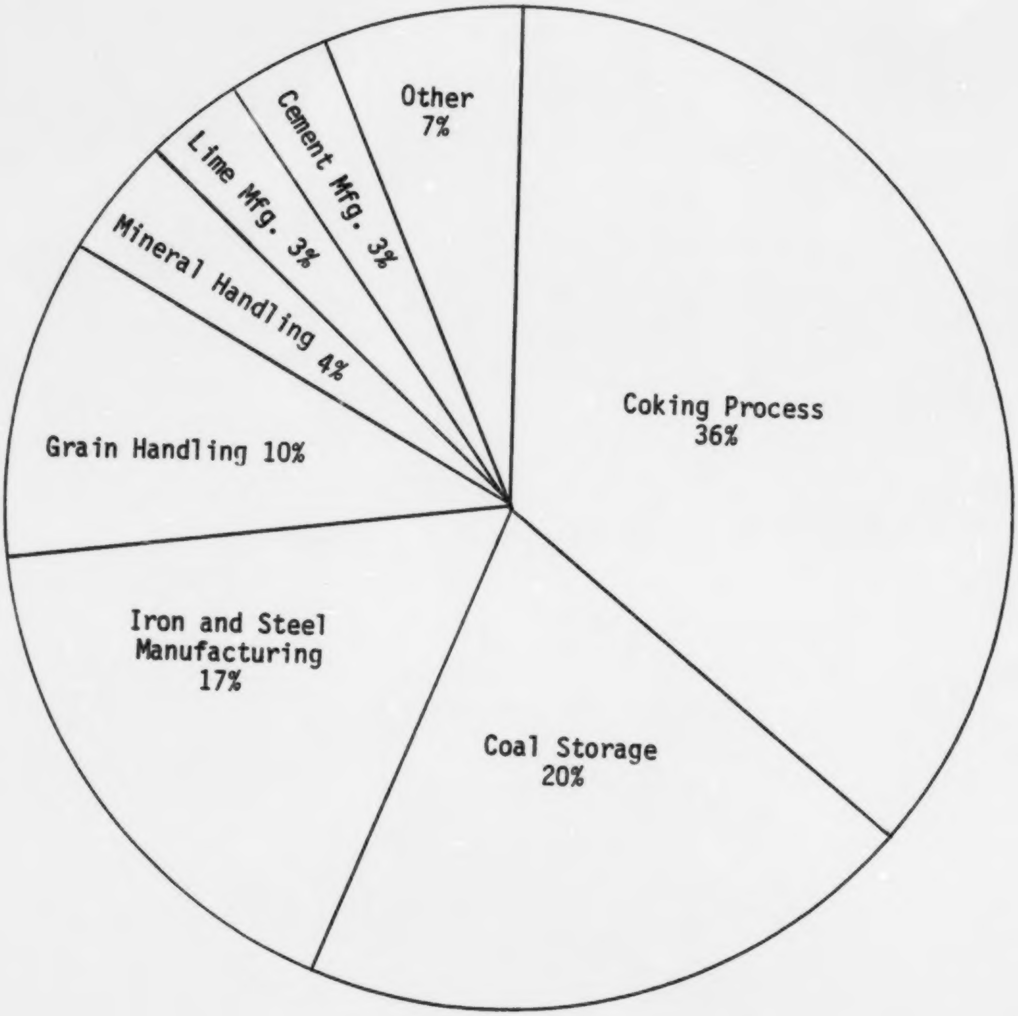
During 1978, there were approximately 146,000 to 288,000 tons of fugitive emissions generated by major industrial sources and deposited into Lake Michigan. Due to its larger U.S. shoreline, the fugitive emission loading is the greatest of the Great Lakes studied. Within EPA Region V jurisdiction, these four states border the lake: Michigan, Illinois, Indiana, and Wisconsin.

The state of Indiana was the major contributor of fugitive emissions to Lake Michigan. Over 55 percent of the total fugitive emissions impacting the lake originated from Indiana. The state of Illinois was the second largest fugitive emission contributor to Lake Michigan. The ten major industrial processes which contributed to the fugitive emission impact of Lake Michigan were: coking processes, coal storage, grain handling, iron production, steel production, mineral handling, sintering processes, lime manufacturing, iron foundry, and cement manufacturing. The contribution percentage from each process is shown in Figure 4-10. One third of all fugitive emissions were contributed by the coking process located in the Gary, Indiana metropolitan area.

Within Illinois, the two counties which border Lake Michigan are Cook and Lake. The major industrial areas are concentrated in Cook County (see Appendix 1), especially the southern section of the city of Chicago. A total of 71 Illinois sources were subject to this study, which were categorized under 20 industrial processes. The largest fugitive emission process was coal storage, emitting about 50 percent of the total fugitive emissions from those sources. Grain handling was the second largest process. The estimated fugitive emissions impact to Lake Michigan from the state of Illinois ranged between 7,900 and 18,000 tons per year.

Within the state of Indiana, the two counties which border Lake Michigan are Lake and Porter. The Gary, Indiana area (in Lake County) contains the majority of industrial facilities. A total of 41 industrial fugitive sources impact Lake Michigan which were categorized

Figure 4-10. PERCENTAGE OF FUGITIVE IMPACT BY PROCESS ON LAKE MICHIGAN



under 17 industrial processes; the largest being the coking process. This process emitted 60 percent of the total fugitive emissions from the facilities. Fugitive emissions originating from steel production was the second largest source. The impact to Lake Michigan from the state of Indiana ranged between 82,000 and 117,000 tons per year.

There are 18 Michigan counties bordering Lake Michigan. Muskegon contains the majority of industries. A total of 31 sources were subject to this study, and were categorized under eight industrial processes. The largest fugitive emission process was mineral handling, emitting about 57 percent of the total emissions from these sources. The emissions impact to Lake Michigan ranged between 7,900 and 18,000 tons per year.

The state of Wisconsin has 12 counties bordering Lake Michigan. The majority of Wisconsin's industrial area is concentrated near the city of Milwaukee, located in Milwaukee County. A total of 68 sources were subject to this study, and were categorized under 15 industrial processes. The largest fugitive emission process was coal storage. The impact to Lake Michigan from Wisconsin ranged between 6,000 and 22,000 tons per year.

5.0 FUGITIVE EMISSION WATER QUALITY INTERACTION

All major industrial sources bordering the Great Lakes were categorized into 20 industrial processes. Each of these processes fall under seven general categories described in the following sections. The following discussion concentrates on estimates of the effect that fugitive emissions generated by those industrial processes have on water quality in the Great Lakes.

5.1 COKING PROCESS

The coking process is the largest fugitive emission process within EPA Region V jurisdiction. Within the process, there are several fugitive emission sources: charging of coal, oven door leaks, coke pushing, and wet coke quenching. The particles which are emitted from the charging of coal, oven door leaks, and coke pushing are basically coal dust, coke dust, and polycyclic organic hydrocarbons. The water vapor, which acts as a particulate comes from the quench tower and contains toxic materials such as naphtalene, phenol, and polyacylic aromatic hydrocarbons. Coal and coke dust increase the total suspended solids in the water. Even when the toxic tendency is omitted, this process contributes about 60,000 tons of sediment particles to the Great Lakes. Sediment loading is considered to have a special role as a pollutant in the Great Lakes where particles settle at rates determined by particle size and density. Settling in the near-shore zone is intermittent. Physical processes associated with turbulent mixing by the wave action results in resuspension and onward transportation of the sediment. In a calm condition, resettling occurs, but again, it is of intermittent nature until such particles move to depths where they are able to settle undisturbed. This produces deep water concentrations of fine particles and associated contaminants, as observed in Lake Superior, Lake Michigan, Lake Huron, and the eastern basin of Lake Erie. It has been suggested that excessive sedimentation near fish spawning grounds could be detrimental to fish viability. High sediment levels in the lake may pose aesthetic problems for recreational uses and may also present problems for drinking water treatment plants.

5.2 COAL STORAGE

The second largest potential fugitive emission source is coal storage. Fugitive emissions originate from coal unloading, coal storage piles, and coal transferring processes. The majority of these processes are associated with the power plants which border the lakes. The fugitive emissions emitted from coal storage processes have the same chemical characteristics as coal being processed.

Fixed carbon is the major component of the fugitive coal dust. Currently, sulfur and other associated compounds bound to the coal are not considered to be major water quality concerns. This coal dust increases the suspended solid in the water and can present problems for the drinking water treatment plants.

5.3 GRAIN HANDLING

Grain handling is the third largest emission source. Fugitive emissions originated from the following operations: grain unloading, loading, transferring, cleaning, and drying processes. The word "grain" includes corn, wheat, rye, oats, barley, flaxseed, malt, and soybeans. Some of these grains have large particle sizes, and therefore, the actual fugitive emission deposit to the lakes are likely less than estimated. The fine grain particles, however, that do deposit in the lake increase suspended solids in the water. The major composition of grain is of a proteinaceous or nitrogenous nature. As soon as proteins leave the life cycle, they begin to decompose by various mechanisms until ultimately, their nitrogen content is returned to the soil or to the water as nitrates. Nitrates are the principle nitrogenous material available in soil for the growth of plants and is especially helpful in the growth of algae. However, nitrogen is not a limiting nutrient in the Great Lakes, except in some near-shore and embayment areas with restricted circulation.

5.4 FERROUS METALLURGICAL

Ferrous metallurgical operations are another large fugitive emissions contributor in EPA Region V jurisdiction. These operations include iron and steel production, ferrous foundry, and sintering. The compositions of these emissions are iron oxide, tin, arsenic, nickel, chromium, silicon oxide, aluminum oxide, calcium oxide, ferric fluoride, cadmium, lead, zinc, and manganese. The major composition of the fugitive particulate emissions is iron oxide, a comparatively harmless particle to the human body. Part of the fugitive emissions also contain some toxic materials, i.e., lead, zinc, arsenic, cadmium and its compounds, and ferric fluoride. Lead and cadmium are on the EPA's priority list of toxic substances. Presently, lead is not an environmental contaminent of concern in the Great Lakes, relative to current concentrations in fish. It has the potential for becoming a problem through chemical and biological methylation if current loadings of lead to the lakes are not reduced. A further detailed study is required to determine the actual concentrations of fugitive toxic substances originating from ferrous metallurgical processes.

5.5 NONFERROUS METALLURGICAL

The International Joint Commission (IJC) ranked the following toxic materials based on their real or anticipated potential as an environmental hazard:

(1) Mercury, lead
(2) Arsenic, cadmium, selenium
(3) Copper, zinc, chromium, vanadium

These hazardous materials are associated with the nonferric metallurgical industry which includes primary and secondary copper, lead, zinc, aluminum, smelting, and foundry operations. The particles coming from these operations contain the following compounds: lead oxide, iron pyrite, limestone, sulfide, sulfate of lead, tin, copper, fluoride, cadmium, cadmium fluoride, and zinc oxide. Many of these substances are also classified as toxic material, i.e., arsenic, cadmium, lead, copper, fluoride, and zinc. Table 5-1 shows the concentration of these elements in the offshore water of the Great Lakes.[7] Only the mercury concentration in Lake Erie and cadmium concentration in Lake Michigan exceed the current IJC objectives. However, it should be noted that the objectives are based on total elemental content, rather than on particular chemical forms of the element.

5.6 MINERAL OPERATIONS

Stone crushing is the largest fugitive emission process impacting Lake Huron. Emissions originate from drilling, crushing, transferring, and regrinding processes. Although a large portion of these emissions consist of heavy particles that settle within the plant, the remaining suspended particles still have impact on the lakes as suspended solids. These processes are also associated with the emission of asbestos fibers (a listed toxic material). This particular pollutant must be monitored closely in areas where traditional waste discharges (wastewater) have been known to occur, as in the case of some Minnesota mining operations and their associated affect on Lake Superior water quality.

Although limestone crushing and refining have a large impact on total suspended solids loading in the Great Lakes, the basic nature of these minerals may help maintain acceptable pH levels in the face of increased acid fallout from local acid rains. However, this benefit may not outweigh the total disbenefit of increased total suspended solids.

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[7] Environmental Management Strategy for the Great Lakes System, International Reference Group on Great Lakes Pollution from Land Use Activities, Winsor, Ontario, July, 1978.

Table 5-1. CONCENTRATIONS OF TRACE ELEMENTS IN THE OFFSHORE WATERS OF THE GREAT LAKES

	µg/L							
LAKE	MERCURY (0.2)[a]	LEAD (10-25)[b]	CHROMIUM (50)[b]	CADMIUM (0.2)[b]	COPPER (5.0)[b]	ZINC (30)[b]	SELENIUM (10)[b]	ARSENIC (50)[b]
Superior	0.10-0.15	≤1.0	≤0.2	≤0.2	2.0-2.5	3.0-5.0	----	0.6-1.0
Michigan[c]	----	7.2[d]	6.8[e]	<2.0[f]	1.8[g]	----	----	<2.0[h]
Huron (open water)	≤0.05[i]	≤1.0	≤0.2	≤0.2	≤2.0	≤7.0	≤0.1	≤0.6
Erie	≤0.5	≤1.0-3.0	----	<0.2	1.0-2.5	2.0-9.0	≤0.1	0.3-0.6
Ontario	0.12	0.7	----	≤0.2	1.2	2.2	----	----

[a] objective for mercury is for a filtered sample; all other objectives are for total element concentration.

[b] International Joint Commission objectives (µg/L)

[c] all samples taken in 1977; sample locations vary from nearshore to a maximum of 30 km outward from the shore.

[d] mean of 101 samples, probably high as most samples were below 6.0 µg/L detection limit.

[e] mean of 103 samples; probably high as most samples were below 3.0 µg/L detection limit.

[f] mean of 102 samples; probably high as most samples were below 2.0 µg/L detection limit.

[g] mean of 99 samples; probably high as most samples were below 1.0 µg/L detection limit.

[h] mean of 11 samples; probably high as most samples were below 2.0 µg/L detection limit.

[i] value for Georgian Bay

Dash (----) indicates data not available.

Lake Michigan data from U.S. Environmental Protection Agency; other data from other sources.

5.7 OTHER OPERATIONS

Other fugitive emission sources are lime manufacturing, cement manufacturing, asphalt batching, and gypsum manufacturing. The particulate fugitive emissions associated with those processes are calcium oxide, sand, lime, silica, iron, aggregate, and calcium sulfate. The ion of calcium and iron most likely will increase the hardness of the water. Also, those particulates will increase the suspended solid and sediment loading in the Great Lakes.

6.0 RECOMMENDATIONS FOR FURTHER STUDY

6.1 VERIFICATION OF FUGUTIVE EMISSIONS

The fugitive emission factors used in this study primarily represent model sources for each individual process. For any specific source, the actual fugitive emissions can vary substantially from the present study results. Also, the actual fugitive emissions can vary from source to source depending on the age of the equipment, the control level, etc. However, the actual fugitive emission rates can be verified by the field inspection and/or source monitoring of a cross-section of industries.

Basically, this field inspection and/or source monitoring would generate a quantitative, and to some extent, refine the qualitative, picture of the estimated fugitive emissions.

When conducting ambient monitoring, it is recommended that the duration of sampling be of sufficient length to obtain statistically significant data, which in this case will represent accurate fugitive emission rates.

6.2 DETERMINE ENVIRONMENTAL IMPACTS FROM FUGITIVE PARTICULATES IN GREAT LAKES WATER QUALITY

Since the composition of the fugitive particulates emitted from each process is uncertain, it is impractical to estimate the overall environmental effects of fugitive particulates on the lake water quality without conducting further composition analysis. In addition to a fugitive particulate composition analysis, the water quality impact can also be determined by the water quality analysis. This water quality impact analysis would be performed in the laboratory on a daily basis by comparing two water samples -- one blank and one contaminated by fugitive emissions. This analysis would provide an understanding of the short and long range effects of each of the fugitive sources.

6.3 DEVELOPMENT AND REFINEMENT OF FUGITIVE EMISSION FACTORS

At the present time, fugitive emission factors are far from being well defined and/or complete. Further studies are recommended to include the development of fugitive emission factors for processes affecting Great Lakes water quality, which are not presently available; and the refinement of fugitive emission factors which have, at present, a reliability rating of "E" (poor-supportable by best engineering judgment).

6.4 EXTENSION OF STUDY AREA TO CANADA AND U.S. EPA REGIONS II AND III

This study cataloged fugitive emissions from Region V sources impacting the Great Lakes. Impacts from Canadian and other U.S. sources may comprise an equal or greater share of the water quality impact. A complete fugitive emission inventory of all sources bordering the Great Lakes would give a complete picture of the potential water quality impact of these fugitive sources.

6.5 EXTENSION OF STUDY TO INCLUDE NON-TRADITIONAL FUGITIVE EMISSION SOURCES

Recent studies have shown that non-traditional fugitive emission sources have a large impact on local air quality. The results of this study include fugitive emissions from major industrial processes. Emissions such as road dust (industrial, residential, and rural) and various construction activities were not included in the inventory results. Fugitive emissions generated from agricultural activities which can produce large quantitites of particulate were also not included. The vast majority of land surrounding the Great Lakes consists of the non-traditional fugitive sources described above. The total fugitive emission impact on the Great Lakes can only be determined when these non-traditional sources are included in the inventory results.

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APPENDIX A

STATE OF ILLINOIS FUGITIVE EMISSION SOURCE INVENTORY

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1=Dec/Feb 2=Mar/May 3=June/Aug 4=Sept/Nov 1/2/3/4	PROCESS DESCRIPTION
COUNTY: COOK							
031600AA0	2431	37600	27	56	1% < 30	15/20/40/25	Wood working
031600ABS	2400	6840	3	1	"	28/28/18/26	Sawing
031600ABZ	2400	1313	10	2	"	25/25/25/25	Wood working
031600AGL	3341	6650	7	18	100% < 1	"	Reverberatory furnace
		5400	473	10	100% < 20	20/33/17/30	Cupola furnace
		4500	1	0	100% < 1	25/25/25/25	Induction furnace
031600AIN	4911	1600000	164	752	50% < 10	"	Coal handling, conveying, crushing
031600AMI	4911	1600000	11	752	"	"	Coal handling
031600AWY	2040	235200	---	5-353	10% < 20	27/11/6/56	Rail unloading - grain
		2083	1	1-3	"	25/25/25/25	Protein conveying
031600AMZ	2952	49800	1	15	60% < 4	"	Mixing asphalt roofing
031600AOX	3340	8300	---	22	100% < 1	25/27/21/27	Reverberatory brass furnace
		9500	---	3	50% < 7	"	Al chip drying
		14660	---	2	100% < 1	"	Al reverberatory furnace
031600ARH	3341	20767	2	138	"	25/25/25/25	Copper smelting - rotary furnace
		2500	---	7	"	"	Copper smelting - reverberatory furnace

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1=Dec/Feb 2=Mar/May 3=June/Aug 4=Sept/Nov 1/2/3/4	PROCESS DESCRIPTION
COUNTY: COOK (con't)							
031600ATP	3462	22000	27	15	80% < 5	25/25/25/25	Steel melting - EAF
031600AVZ	2083	91300	3	1-137	10% < 20	25/25/20/30	Malt handling
		100000		2-150	"	"	Unloading - R.R.
		48000	---	0-72	"	"	Car loading
031600AWO	2041	90353	27	77-1048	"	25/25/25/25	Flour operation
031600BBM	3270	10000	13	1	20% < 5	"	Concrete drying
		17200	---	2	"	"	Elevator screening
031600BJO	2950	480000	8	146	60% < 4	10/20/40/30	Asphalt batching
031600BNS	2099	26708	1	4-50		25/30/20/25	Grain receiving
031600BNW	2816	3500	---	4	100% < 16	25/25/25/25	PbO milling
		3500	1	1	"	"	Kiln
		3000	---	1	"	"	PbC packing
031600BOJ	3323	38000	12	26	80% < 5	25/25/25/25	Steel melting - EAF
031600BPP	3270	586480	2	70	58% < 20	15/23/30/32	Cement silo storage
		1200000	---	60	20% < 5	"	Concrete batching
031600BQF	3273	173000	1	21	58% < 20	"	Cement silo storage
		187600	---	9	20% < 5	"	Concrete batching

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1=Dec/Feb 2=Mar/May 3=June/Aug 4=Sept/Nov 1/2/3/4	PROCESS DESCRIPTION
COUNTY: COOK (con't)							
031600BRV	2951	360000	3	110	60% < 4	0/25/50/25	Asphalt batching
031600CJH	4463	1880000	1	38	58% < 20	"	Cement loading
031600CRQ	3399	6500	2	1-3	50% < 15	25/25/25/25	Shot blasting
031600DXA	2653	5000	2	5	100% < 100	"	Metal conveying
031600EDK	3340	11000	7	3-7	100% < 1	"	Zinc rotary furnace
031600EMV	3944	2062	3	3	1% < 30	"	Wood sawing
031600AAW	3473	102400	45	8-41	50% < 15	"	Shot blasting
031600ABC	3479	59850	6	40	"	"	Sand transfering
031600AOL	3341	3000	1	15-39	100% < 1	"	Zinc smelting
031600AQW	2819	39500	24	66	---	"	Sodium tripolyphosphate reactor
031600ARY	2951	360000	2	124	60% < 4	0/10/40/50	Asphalt batching
031600ASE	3251	148580	---	498	---	15/30/25/30	Brick kiln
031600ATR	2083	96000	4	82-1114	10% < 20	28/25/22/25	Grain handling
031600CBQ	2065	1600	---	1-19	"	30/20/15/35	Bean cleaning
		2700	3	1-14	"	"	Cocoa handling
031600EBN	2040	66000	30	8-300	"	25/25/25/25	Soybean handling
		46000	35	5-184	"	"	Flake drying

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1=Dec/Feb 2=Mar/May 3=June/Aug 4=Sept/Nov 1/2/3/4	PROCESS DESCRIPTION
COUNTY: COOK (con't)							
031600EBN	2040	62000	3	6-285	10% < 20	25/25/25/25	Meal grinding
		68600	2	5-120	"	"	Soybean loading
031600ADY	3274	229000	3	27	95% < 20	"	Lime handling
		24800	9	10	"	"	Lime hydrator
		18000	3	14	"	"	Hydrate separating
		400000	5	48	"	"	Lime loading
		40000	1	2	"	"	Flue dust handling
		235900	4	95	"	"	Lime kiln
		---	---	191	"	"	Lime kiln pile road
031600AED	5039	680000	17	14	"	"	Lime unloading
031600AED	3325	20918	10	14	50% < 15	"	Sand crushing
		11200	3	28-56	80% < 5	"	Steel melting - EAF
031600AHI	4789	166660	---	68	10% < 20	0/53/23/24	Grain storage
		166660	1	118	"	0/33/33/34	Meal unloading
		166660	---	67	"	"	Ship loading
031600AIE	4221	1200000	5	852-13380	"	10/20/30/40	Grain handling
		1200000	---	177	"	"	Grain loading

COUNTY: COOK (con't)

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1=Dec/Feb 2=Mar/May 3=June/Aug 4=Sept/Nov 1/2/3/4	PROCESS DESCRIPTION
031600ALZ	3312	117000	140	82	80% < 5	25/25/25/25	Steel melting - EAF
		1978000	21	443	50% < 70	"	Iron melting blast furnace
		---	---	874	50% < 180	"	Ore transfering
		---	---	109	95% < 20	"	Limestone handling
		---	---	66	10% < 5	"	Sinter handling
		---	---	515	50% < 180	"	Iron ore storage
		---	---	141	---	"	Metal flux storage
		---	---	6	50% < 17	"	Slag storage
		---	---	82	50% < 70	"	Flue dust storage
		---	---	11	90% < 10	"	Coke transfering
		---	---	86	"	"	Coke storage
		94600	199	24	90% < 5	"	Steel melting - BOF
		56800	12	40	80% < 5	"	Steel melting - EAF
		2760	6	2-18	50% < 15	"	Slab grinding
		698880	15	479-4755	"	"	Billet grinding
		454880	889	289-830	10% < 5	"	Sintering
		121000	18	120	---	"	AOD vessel
		60000	6	41	50% < 15	"	Sand handling

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1=Dec/Feb 2=Mar/May 3=June/Aug 4=Sept/Nov 1/2/3/4	PROCESS DESCRIPTION
COUNTY: COOK (con't)							
031600ALZ	3312	15500	---	6-47	50% < 15	25/25/25/25	Core oven
031600AMA	3312	626000	177	282	50% < 70	"	Iron melting blast furnace
		478000	37	327-3253	"	"	Iron casting
		450000	753	286-821	10% < 5	"	Sintering
		---	---	642	---	"	Unpaved road
		---	---	996	10% < 5	"	Sinter storage
		---	---	957	50% < 70	"	Blast furnace flue dust storage
		---	---	295	10% < 5	"	Sinter discharging
		---	---	236	"	"	Sinter transfering
		---	---	246	90% < 20	"	Limestone storage
		---	---	5	90% < 10	"	Coke breeze storage
		---	---	1396	50% < 180	"	Iron ore sinter storage
		---	---	38	90% < 20	"	Limestone storage
		---	---	25	"	"	Dolomite stone storage
		---	---	18	90% < 10	"	Coke pile
		---	---	9	50% < 17	"	Slag hanging
031600AMB	3312	217100	27	232	90% < 10	"	Coking process

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1=Dec/Feb 2=Mar/May 3=June/Aug 4=Sept/Nov 1/2/3/4	PROCESS DESCRIPTION
COUNTY: COOK (con't)							
031600AMB	3312	217100	---	578	90% < 10	25/25/25/25	Battery charging
		80000	---	11	"	"	Mill furnace
		300000	46	2	100% < 2	"	Iron scarfing
		408600	6101	102	90% < 5	"	Iron reladling
		1358000	---	192	50% < 70	"	Iron melting blast furnace
		25600	22	1	50% < 15	"	Billet grinding
		100000	---	8	"	"	Lead adding
		250000	17	250	50% < 10	"	Coal conveying-crushing
		---	---	70	"	"	Coal loading
		---	---	943	50% < 180	"	Iron ore loading
		---	---	65	90% < 10	"	Coke storage
		---	2	1	100% < 2	"	Billet scarfing
031600AMC	3312	432500	8	157	50% < 70	"	Blast furnace
		600000	37	3	100% < 2	"	Hot scarfing
		71250	---	1	"	"	Mill soaking pit
		10000	---	17	"	"	Wire mill - lead quenching
		81000	1	6-32	"	"	Iron finishing

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1=Dec/Feb 2=Mar/May 3=June/Aug 4=Sept/Nov 1/2/3/4	PROCESS DESCRIPTION
COUNTY: COOK (con't)							
031600AMC	3312	40000	1	3-16	100% < 2	25/25/25/25	Mill grit blasting
		20000	1	2-8	"	"	Mill grinding
		20000	66	15	"	"	Dust collecting
		15000	1	---	"	"	Mill billet
		135000	74	227	90% < 10	"	Coking oven
		527250	16	132	"	"	Iron melting - BOF
		94000	202	66	80% < 5	"	Steel melting - EAF
		81217	34	57	"	"	EAF charging
		---	---	428	---	"	Unpaved road
		---	---	130	---	"	Steel scrap storage
		---	---	178	50% < 10	"	Coal handling
		---	---	10	90% < 10	"	Coke handling
		---	---	799	100% < 100	"	Taconite storage
		---	---	75	90% < 20	"	Limestone storage
		---	---	8	90% < 10	"	Coke storage
		---	---	6	50% < 70	"	Slag handling
031600AMD	4221	900000	0	144-1575	10% < 20	10/20/30/40	Grain truck dumping

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1=Dec/Feb 2=Mar/May 3=June/Aug 4=Sept/Nov 1/2/3/4	PROCESS DESCRIPTION
COUNTY: COOK (con't)							
031600AMD	4221	900000	1	450-1125	10% < 20	10/20/30/40	Grain transfering
		1200000	1	24-1800	"	"	Grain boxcar dumping
		600000	1	1-1050	"	"	Grain barge receiving
		288000	1	27-1325	"	50/0/0/50	Grain screening-cleaning
		288000	2	27-1325	"	"	Grain storage
		150000	18	14-600	"	40/0/0/60	Grain drying
		2076000	1	2-3633	"	10/20/30/40	Grain shipping
		---	---	67	"	"	Grain loading spout
031600ANE	4221	560000	---	280-700	"	50/10/20/20	Grain conveying
		1200000	3	48-2100	"	10/20/30/40	Grain barge unloading
		900000	---	144-1575	"	"	Grain truck dumping
		120000	2	300	"	"	Grain hopper car dumping
		120000	5	300	"	"	Belt boot leg
		900000	4	300	"	"	Leg boot
		1800000	7	450	"	"	Grain scaling
		1800000	54	17-828	"	40/0/0/60	Grain cleaning
		1200000	1	600-1500	"	10/20/30/40	Grain conveying
		62000	11	31	"	"	Grain pulverizing

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1=Dec/Feb 2=Mar/May 3=June/Aug 4=Sept/Nov 1/2/3/4	PROCESS DESCRIPTION
COUNTY: COOK (con't)							
031600ANE	4221	85000	---	5	10% < 20	25/25/25/25	Grain pelletizing
		1100000	1	8-1650	"	50/0/0/50	Grain R.R. loading
031600AQE	4221	1440000	1	115-1260	"	10/20/30/40	Grain truck dumping
		1200000	1	24-2100	"	"	Grain boxcar dumping
		1200000	1	600-1500	"	"	Grain hopper car dumping
		90000	---	9-360	"	40/0/0/60	Rack drying
		600000	---	90	"	30/15/40/15	Grain shipping
		---	---	301	"	10/20/30/40	Loading spout and road
031600AUB	3331	2008	1	4	100% < 1	25/25/25/25	Brass smelting rotary furnace
031600ANJ	2083	1590000	6	1463-21227	10% < 20	30/20/20/30	Grain handling
	2043	8100	0	1-32	"	27/21/28/24	Flour drying
		18000	0	3-32	"	27/28/26/19	Grain bulk unloading
		13300	14	1-61	"	25/25/25/25	MIAG scalperating
		27500	2	3-127	"	"	Grain screening
		13000	2	2	"	"	Grain purifying
		400	1	1	"	"	Vacuum transfering
		411600	---	1	"	0/0/99/0	Grain shipping

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1=Dec/Feb 2=Mar/May 3=June/Aug 4=Sept/Nov 1/2/3/4	PROCESS DESCRIPTION
COUNTY: COOK (con't)							
031600ANJ	2043	13300	1	2	10% < 20	25/25/25/25	Milletors
031600BEU	2041	2065000	1	330-3613	"	0/0/20/80	Grain receiving
		336000	1	322-1545	"	"	Screening & cleaning
		196000	1	19-784	"	"	Grain drying
031600BFB	3312	217600	---	936	90% < 10	25/25/25/25	Coke oven charging - pushing
		217600	23	130	"	"	Quenching
		217600	---	10	"	"	Door leaking
		---	---	140	"	"	Coke storage
031600BFD	3320	---	---	90	50% < 15	"	Sand handling
		80000	---	4-165	"	"	Assembly & casting operation
		65260	9	45	"	"	Mould metal mixing
		57000	9	39	"	"	Sand muller
031600CGT	2951	20000	2	114	60% < 4	0/10/50/40	Aggregate drying
031600DVV	2499	40000	2	40	---	25/25/25/25	Briquet drying
		40000	0	67	---	"	Briquet screening
031600EEV	3399	---	---	175	50% < 180	"	Ore clinkers

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1=Dec/Feb 2=Mar/May 3=June/Aug 4=Sept/Nov 1/2/3/4	PROCESS DESCRIPTION
COUNTY: COOK (con't)							
031600EKT	2999	80000	2	51-146	10% < 15	25/25/25/25	Sinter handling
		---	---	112	50% < 70	"	Flue dust
031288AAB	2951	180000	3	55	60% < 4	5/10/55/30	Asphalt batching
031288AAD	3320	77400	---	53	100% < 15	"	Sand mixing
		70400	1	42-451	"	"	Shakeout
		8400	1	0-17	"	"	Mold pouring
031288ABN	3999	320000	12	98	60% < 4	5/15/50/30	Aggregate handling
COUNTY: LAKE							
097125AAA	2819	97790	59	46-91	50% < 10	27/25/24/24	Coal storage
097125AAG	3341	7000	7	18	100% < 1	25/25/25/25	Iron reverberatory furnace
		3000	10	7	"	"	Iron rotary furnace
		5900	17	11	100% < 20	20/30/20/30	Iron cupola
097140AAA	2951	560000	8	171	60% < 4	4/8/50/38	Asphalt batching
097190AAC	4911	3400000	20	3400	50% < 10	25/25/25/25	Coal receiving
		16600000	---	12450	"	"	Coal conveying
		16600000	---	7802-15438	"	"	Coal storage
097190AAJ	2951	---	---	18	---	10/30/30/30	Unpaved road
		---	---	5	100% < 100	"	Storage pile

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1=Dec/Feb 2=Mar/May 3=June/Aug 4=Sept/Nov 1/2/3/4	PROCESS DESCRIPTION
COUNTY: LAKE (con't)							
097190AAJ	2951	13000	2	1	60% < 4	21/27/28/24	Silica grinding
097190AAP	3275	150000	39	15	100% < 100	20/25/30/25	Rock drying
		---	---	17	"	25/25/25/25	Storage pile
		---	---	7	---	"	Unpaved road
		60975	1	1	95% < 20	20/25/30/25	Mixing packing
		180000	0	45	"	"	Drying-crushing
		45200	9	18	"	"	Calcining
		110400	---	1	"	"	Tube mill
097190ADB	3275	700000	0	140	58% < 20	10/30/30/30	Cement unloading
		100000	---	12	"	"	Truck loading
097809AAB	2951	730000	54	223	60% < 4	5/10/50/35	Asphalt batching
		---	---	25	"	"	Storage pile
		---	---	5	---	"	Unpaved road
097811AAB	3273	420000	---	27	20% < 5	11/21/36/32	Concrete batching
		---	---	17	"	"	Storage pile
		---	---	40	---	"	Unpaved road

APPENDIX B

STATE OF INDIANA FUGITIVE EMISSION SOURCE INVENTORY

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1=Dec/Feb 2=Mar/May 3=June/Aug 4=Sept/Nov 1/2/3/4	PROCESS DESCRIPTION
COUNTY:	LAKE						
0002	2046	9000000	9	4500-11250	10% < 20	25/25/25/25	Corn dirt silo, recovery exhaust in building
		338520	95	32-1354	"	"	Flush drying
		44584	60	4-182	"	"	Rotary drying
		133006	53	13-532	"	"	Fired cooling
		47040	47	24-59	"	"	Feed pill returning
		252000	104	126-315	"	"	Finished feel conveying
		67200	14	34-84	"	"	Waxy feed milling, conveying
		232260	116	22-929	"	"	Waxy feed drying
		56700	19	28-71	"	"	Waxy germ conveying
		100901	51	51-126	"	"	Recovery 1st stage germ
		156635	20	15-627	"	"	Gluten drying
		30240	30	3-121	"	"	Gluten cooling
		34440	7	17-43	"	"	Gluten conveying
		263562	217	25-1054	"	"	Starch ring drying
		1205064	181	603-1506	"	"	Starch bin storage
		210000	11	15-386	"	"	Starch loading
		567000	42	284-709	"	"	Starch conveying

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1=Dec/Feb 2=Mar/May 3=June/Aug 4=Sept/Nov 1/2/3/4	PROCESS DESCRIPTION
COUNTY: LAKE (con't)							
		46200	23	23-58	10% < 20	25/25/25/25	Syrup solid
	3325	41600	21	27	50% < 15	"	Sand kiln & cooling cooler
		1040000	96	624-6656	50% < 15	"	Foundry shakeout
		149670	18	97	50% < 15	"	Sand screening
		45500	3	4-18	50% < 15	"	Tumblast
		62400	6	44	100% < 1	"	Steel foundry - EAF
		327600	64	26-131	50% < 15	"	Kirk & Blum cooling
0007	2499	6916	10	4		"	Pallet manufacturing
0009	3323	10400	6	1-4	50% < 15	"	Shot blast
		83200	10	55	"	"	Foundry sand reclamation
	3343	49920	324	35	100% < 1	"	Steel foundry -EAF
0012	2952	41500	5	13	60% < 4	"	Asphalt roofing
0013	3341	122855	9	116-646	100% < 1	"	Lead smelting
0014	3297	55119	50	14	20% < 5	"	Brick manufacturing
		20518	7	21	"	"	Rotary drying
0015	3312	2748575	---	139	90% < 10	"	Coke oven

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1=Dec/Feb 2=Mar/May 3=June/Aug 4=Sept/Nov 1/2/3/4	PROCESS DESCRIPTION
COUNTY: LAKE (con't)							
0015	3312	2668516	---	1376	90% < 10	25/25/25/25	Coke charging
		3273435	2	829	"	"	Coke pushing
		3273400	1272	1964	"	"	Coke quenching
		3273400	329	5499	"	"	Underfiring
		1910500	212	160	75% < 5	"	Steel melting - OHF
		3738570	---	1414	90% < 5	"	BOF deslaging
		4901270	50	2206	50% < 70	"	Iron melting - blast
		4182614	65	23	100% < 2	"	Steel scarfing
0016	3312	228458	48	94-199	50% < 10	"	Coal storage
		366000	82	5-22	50% < 15	"	Steel finishing
		1145329	140	727-2092	10% < 5	"	Sintering
		4901550	---	756	50% < 70	"	Blast furnace casting
		350915	19	246	80% < 5	"	Steel melting - EAF
0024	2999	120000	22	12-24	90% < 10	"	Coke calcining
0025	3321	20905	2	13	50% < 15	"	Sand handling
0032	4911	1304994	2094	535-1135	50% < 10	24/25/25/26	Coal storage
0035	4911	2192103	2693	899-1907	"	"	Coal storage

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1=Dec/Feb 2=Mar/May 3=June/Aug 4=Sept/Nov 1/2/3/4	PROCESS DESCRIPTION
COUNTY:	LAKE (con't)						
0037	3275	456462	2	188	95% < 20	25/25/25/25	Gypsum transfering
		125840	---	1	"	"	Kiln drying
0038	3312	4047103	152	1720	90% < 10	"	Battery charging
		4058848	49	154	"	"	Coking cycle
		4058848	---	1217	"	"	Battery pushing
		4058848	312	418	"	"	Coke quenching
		5090848	535	8552	"	"	Underfiring
		4835466	635	2176	50% < 70	"	Blast furnace
		1437122	32	17-93	90% < 10	"	Coke screening
0039	3312	3752000	120	2383-6847	10% < 5	"	Sinter discharging
		4415760	5656	2383-6847	100% < 5	"	Sintering
		2910895	10	16	100% < 2	"	Iron scarfering
		74093	656	30-64	50% < 10	"	Coal storage
		929687	23	11-60	"	"	Coal screening
		13200000	1308	3300	90% < 5	26/26/24/24	Steel melting - BOF
		301750	23	128	90% < 10	25/25/25/25	Battery charging
		1032000	52	263	"	"	Coking cycle

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1=Dec/Feb 2=Mar/May 3=June/Aug 4=Sept/Nov 1/2/3/4	PROCESS DESCRIPTION
COUNTY:	LAKE (con't)						
0039	3312	301700	---	91	90% < 10	25/25/25/25	Battery charging
0041	3341	26280	3	158	100% < 1	"	Lead smelting - blast furnace
		6570	2	39	"	"	Lead smelting - reverberatory furnace
		15825	---	6	"	"	Casting
		3120	---	1 (Pb)	100% < 16	"	Lead kettling
0042	3241	652000	3905	3456-5966	58% < 20	30/25/15/30	Cement manufacturing
0044	3312	16192	3	10-30	10% < 5	25/25/25/25	Sintering
		1986768	14	11	100% < 2	"	Scarfering
		2850854	218	713	90% < 5	"	Iron melting - BOF
		21294	181	9-19	50% < 10	31/30/21/18	Coal storage
		2273907	6919	1023	50% < 70	25/25/25/25	Blast furnace
		1164467	---	2037	90% < 10	"	Coke oven
		1164467	70	404	"	"	Battery charging
		1164467	---	280	"	"	Battery pushing
		1164467	79	699	"	"	Quenching
0065	3341	10056	3	24	100% < 1	"	Copper smelting

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1=Dec/Feb 2=Mar/May 3=June/Aug 4=Sept/Nov 1/2/3/4	PROCESS DESCRIPTION
COUNTY: LAKE (con't)							
0065	3341	7104	3	19	100% 1	25/25/25/25	Brass/rev. furnace
		4050	1	4	100% < 16	"	Lead smelting furnace
		5100	1	9	100% < 2	"	Zinc smelting furnace
0070	3274	1517015	303	607	95% < 20	"	Lime calcining kiln
		727594	---	109	95% < 20	"	Lime dust handling
		167522	---	238	"	"	Lime crushing
0073	2951	420480	10	128	60% < 4	0/20/40/40	Asphalt batching
0074	2951	20000	4	6	"	"	Asphalt batching
0077	3415	154000	2	1	50% < 15	25/25/25/25	Steel finishing
0084	3341	1372800	523	151	100% < 2	"	Al smelting furnace
0093	3273	83200	1	15	20% < 5	5/25/35/35	Concrete batching
0098	3399	6000	1	2	-------	26/26/22/26	Copper powder production
0100	3341	18565	2	23	100% < 1	25/25/25/25	White lead drying
0140	2951	90000	21	27	60% < 4	0/40/50/10	Asphalt batching
0140	3341	60000	17	56	100% < 2	25/25/25/25	Al production
0142	3341	12480	20	17-98	100% < 16	"	Lead smelting rev. furnace
0144	1499	87360	5	87	100% < 100	"	Mineral drying

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1=Dec/Feb 2=Mar/May 3=June/Aug 4=Sept/Nov 1/2/3/4	PROCESS DESCRIPTION
COUNTY: LAKE (con't)							
0147	2951	72000	16	22	60% < 4	0/25/50/25	Asphalt batching
0150	3273	1872000	19	337	20% < 5	20/25/35/20	Concrete batching
0162	2951	80000	18	24	60% < 4	0/40/50/10	Asphalt batching
0163	3297	46244	3	66	20% < 5	25/25/25/25	Brick manufacturing
0165	3295	196000	51	296	100% < 100	20/30/30/20	Roof granule blast grit.
0166	3310	80000	10	6-32	50% < 15	25/25/25/25	Foundry cleaning
COUNTY: PORTER							
0001	3312	3336686	14	1502	50% < 70	25/25/25/25	Iron melting blast furnace
		7904880	504	1976	90% < 5	"	Steel melting - BOF
		2057324	10	11	100% < 2	"	Scarfing
		2440649	109	4100	90% < 10	"	Coke oven
		2037629	183	1294-3719	10% < 5	"	Sintering
0002	4911	1002205	449	411-872	50% < 10	"	Coal storage
0007	5153	49000	---	59	10% < 20	"	Grain handling
0016	2951	100000	23	31	60% < 4	5/5/30/60	Asphalt batching

APPENDIX C

STATE OF MICHIGAN FUGITIVE EMISSION SOURCE INVENTORY

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING* SCHEDULE 1= Jan/March 2= Apr/June 3= July/Sept 4= Oct/Dec 1/2/3/4	PROCESS DESCRIPTION
COUNTY: ALGER							
B1470	2621	35444	3539	16-32	50% < 10	25/25/25/25	Coal storage
COUNTY: ARENAC							
B4970	1422	460	1	22-41	100% < 100	"	Stone crushing
M1856	3274	420	1	39	95% < 20	"	Lime milling
COUNTY: BAY							
A0224	3241	390000	19	1019-1529	58% < 20	"	Cement grinding
A0227	3272	24589	---	5	20% < 25	"	Concrete batching
A0233	3321	5200	---	4	100% <	"	Iron melting - EAF
		1200	---	3-6	100% < 1	"	Iron melting - EIF
		7300	---	4-13	"	"	Steel melting - EAF
B1485	2950	47758	7	17	60% < 4	"	Asphalt batching
B1487	3321	7000	---	4-12	100% < 1	"	Steel melting - EAF
		28500	---	20-194	50% < 15	"	Foundry shakeout & finishing
B1491	4221	55055	---	47-639	100% < 20	"	Grain drying
B1493	2063	32000	4	14-29	50% < 10	"	Coal storage
B2460	3714	1083	2	1	100% < 2	"	Al smelting reverberatory furnace

* The seasonal operation schedule is not available in the Michigan emission inventory file.

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING* SCHEDULE 1= Jan/March 2= Apr/June 3= July/Sept 4= Oct/Dec 1/2/3/4	PROCESS DESCRIPTION
COUNTY: BAY (con't)							
B2460	3714	13022	---	19	100% < 2	25/25/25/25	Zinc pot furnace
B2840	4911	470000	619	212-428	50% < 10	"	Coal storage
B2844	4911	612000	3204	275-557	"	"	Coal storage
COUNTY: BERRIEN							
A0367	1442	77500	---	7-31	50% < 15	"	Foundry muller
B1511	3322	32600	49	28-132	"	"	Foundry muller
		32600	3	196-2086	"	"	Foundry shakeout
		44800	17	134-334	100% < 1	"	Iron melting - EAF
		3630	---	4-12	"	"	Iron melting - EIF
B1512	3322	470900	4	283-3204	50% < 15	"	Foundry muller
		470900	4	40-191	"	"	Foundry shakeout
		86200	37	43-299	100% < 20	"	Iron melting cupola
B2404	3321	74861	13	37-259	"	"	Iron melting cupola
		470250	71	40-190	50% < 15	"	Foundry muller
		470250	2	282-3010	"	"	Foundry shakeout
B5838	1611	50000	2	15	60% < 4	"	Asphalt batching
B6223	2951	15000	19	5	60% < 4	"	Asphalt batching

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I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING* SCHEDULE 1= Jan/March 2= Apr/June 3= July/Sept 4= Oct/Dec 1/2/3/4	PROCESS DESCRIPTION
COUNTY: BERRIEN (con't)							
B6578	3321	52000	22	26-180	100% < 1	25/25/25/25	Iron melting cupola
		52000	---	4-21	50% < 15	"	Casting cleaning
		52000	---	31-333	"	"	Casting shakeout
COUNTY: CHIPPEWA							
B1566	1611	13700	4	6	60% < 20	"	Asphalt batching
B2362	1422	2200000	110	2387-4466	100% < 100	"	Stone crushing
COUNTY: DELTA							
B1570	4010	69000000	262	518	"	"	Iron ore conveying
B1573	9349	81504	630	37-74	50% < 10	"	Coal storage
B5239	1494	55000	8	15	60% < 4	"	Asphalt batching
B5240	1494	21400	3	6	"	"	Asphalt batching
COUNTY: HURON							
B2815	4911	254588	185	115-232	50% < 10	"	Coal storage
B2873	2063	18450	106	8-17	"	"	Coal storage
B4944	1422	634597	32	688-1288	100% < 100	"	Sand crushing
COUNTY: MACKINAC							
B4924	1422	3958000	198	4294-8034	"	"	Stone crushing

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I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING* SCHEDULE 1= Jan/March 2= Apr/June 3= July/Sept 4= Oct/Dec 1/2/3/4	PROCESS DESCRIPTION
COUNTY: MACOMB							
A3179	3273	155000	---	31	20% < 5	25/25/25/25	Concrete batching
A3352	2951	50000	1	18	60% < 4	"	Asphalt batching
B1783	3321	49000	40	30-343	100% < 20	"	Iron melting cupola
		422400	3	2	50% < 15	"	Foundry muller
		49000	1	67-673	"	"	Foundry shakeout
B4124	3273	184000	1	37	20% < 5	"	Concrete batching
B5635	3362	3879	4	2	100% < 1	"	Brass electric induction furnace
B5852	3273	80000	---	16	20% < 5	"	Concrete batching
B6264	3272	50000	---	10	"	"	Concrete batching
B6277	3273	60000	---	12	"	"	Concrete batching
B6280	3273	30000	---	6	"	"	Concrete batching
B6287	3273	50000	---	10	"	"	Concrete batching
COUNTY: MARQUETTE							
B1833	4911	103973	354	47-95	50% < 10	"	Coal storage
B4261	4911	1216782	926	548-1107	"	"	Coal storage

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I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING* SCHEDULE 1= Jan/March 2= Apr/June 3= July/Sept 4= Oct/Dec 1/2/3/4	PROCESS DESCRIPTION
COUNTY: MASON							
A3933	3297	230000	122	406	95% < 20	25/25/25/25	Lime calcining
A3932	3321	30001	64	9-98	100% < 20	"	Iron melting cupola
		121709	1	83-828	50% < 15	"	Foundry sand handling muller
B1846	2810	350000	420	619	95% < 20	"	Lime calcining
B1851	2951	59000	7	20	60% < 4	"	Asphalt batching
B4114	4452	8760	41	4-8	50% < 10	"	Coal storage
COUNTY: MONOMINEE							
B1855	2621	57197	282	26-52	50% < 10	"	Coal storage
COUNTY: MONROE							
A4097	3273	17000	---	3	20% < 5	"	Concrete batching
A4127	3465	40682	212	18-37	50% < 10	"	Coal storage
B2816	4911	4007844	4476	1803-3647	"	"	Coal storage
B2846	4911	871000	552	392-793	"	"	Coal storage
COUNTY: MUSKEGON							
A4203	2611	150489	104	68-136	"	"	Coal storage

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I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING* SCHEDULE 1= Jan/March 2= Apr/June 3= July/Sept 4= Oct/Dec 1/2/3/4	PROCESS DESCRIPTION
COUNTY:	MUSKEGON	(con't)					
A4231	3273	57000	---	11	20% < 5	25/25/25/25	Concrete batching
A4238	3361	15000	2	10-102	50% < 15	"	Foundry sand handling shakeout
A4242	3362	4000	---	3-27	"	"	Foundry sand handling shakeout
A4302	3714	25136	30	8-82	100% < 20	"	Iron melting cupola
		148775	3	13-60	50% < 15	"	Foundry sand handling muller
		137156	3	82-878	"	"	Shakeout
A4315	3321	2264	---	2	100% < 1	"	Steel melting electric induction furnace
B1893	2951	40000	6	14	60% < 4	"	Asphalt batching
B1906	3321	33936	2	1	50% < 15	"	Foundry sand handling muller
		35616	2	21-242	"	"	Foundry shakeout
		21807	3	2-9	"	"	Foundry chipping
B1907	3321	72000	---	1	"	"	Foundry sand handling muller
		70253	90	4-70	100% < 20	"	Iron melting cupola

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I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING* SCHEDULE 1= Jan/March 2= Apr/June 3= July/Sept 4= Oct/Dec 1/2/3/4	PROCESS DESCRIPTION
COUNTY: MUSKEGON (con't)							
B1907	3321	16320	---	10-104	50% < 15	"	Foundry shakeout
		30387	5	2-12	"	"	Casting chipping
B1908	3321	5486	8	14-27	100% < 1	"	Iron melting - EAF
		117072	59	42-356	50% < 10	"	Core oven
		4781	---	3-31	50% < 15	"	Foundry shakeout
		2665	---	1	"	"	Foundry chipping
B1925	3320	2000	---	1-13	"	"	Foundry shakeout
		1800	---	5-10	100% < 1	"	Steel melting - EAF
B1929	3320	1300	---	1	"	"	Steel melting electric induction furnace
		34000	1	1	50% < 15	"	Sand muller
B2836	4911	1473000	3477	663-1340	50% < 10	"	Coal storage
COUNTY: ONTONAGON							
A5754	2631	44006	489	20-40	50% < 10	"	Coal storage
B1966	1021	62452	206	28-57	50% < 10	"	Coal storage
		232776	537	3666	50% < 37	"	Copper smelting furnace
		50581	2223	265	"	"	Copper converting

* The seasonal operation schedule is not available in the Michigan emission inventory file.

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING* SCHEDULE 1= Jan/March 2= Apr/June 3= July/Sept 4= Oct/Dec 1/2/3/4	PROCESS DESCRIPTION
COUNTY:	OTTAWA						
A5872	3272	60000	---	12	20% < 5	25/25/25/25	Concrete batching
		90000	---	18	"	"	Concrete silo
A5879	3362	5200	---	1	100% < 1	"	Brass electric induction furnace
		40300	---	1	50% < 15	"	Foundry muller
		40300	---	24-258	"	"	Foundry shakeout
2835	4911	1473000	5207	663-1340	50% < 10	"	Coal storage
OUNTY:	PRESQUE ISLE						
4925	1422	11500000	54	11888	100% < 100	"	Stone crushing
		6100	---	3-6	50% < 10	"	Coal storage
OUNTY:	SCHOOLCRAFT						
4931	1422	3250000	121	5096	95% < 20	"	Lime mill
OUNTY:	WAYNE						
5928	2082	144050	32	695-737	10% < 20	"	Grain milling
7809	3312	2761843	32	15	100% < 2	"	Steel scarfing
		3612823	1200	903	90% < 5	"	Steel production - BOF
		683333	4	478	100% < 1	"	Steel production - EAF

The seasonal operation schedule is not available in the Michigan emission inventory file.

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING* SCHEDULE 1= Jan/March 2= Apr/June 3= July/Sept 4= Oct/Dec 1/2/3/4	PROCESS DESCRIPTION
COUNTY:	WAYNE (con't)						
A7809	3312	2171263	3369	3647	90% < 10	25/25/25/25	Coke battery
		413089	4897	897-2579	10% < 5	"	Iron sintering
		3048647	86	494-1612	50% < 70	"	Agglomerate blast furnace
A7816	3321	3000	1	6-33	100% < 20	"	Iron melting cupola
A7835	3341	23625	11	11	100% < 16	"	Lead smelting pot furnace
A8631	3711	36214	57	16-33	50% < 10	"	Coal storage
A8640	3312	1594418	1819	2679	90% < 10	"	Coke battery
		3191827	160	3192	100% < 100	"	Ore handling
		2124316	1704	956	50% < 70	"	Blast furnace
		2568733	670	642	90% < 5	"	Steel production - BOF
		936684	70	5	100% < 2	"	Slab scarfing
		79912	12	6-32	50% < 15	"	Casting cleaning
		736588	28	516	100% < 1	"	Steel production - EAF
A8646	3321	165375	23	83-573	100% < 20	"	Iron cupola
		330762	2	227-2250	50% < 15	"	Shakeout
		65280	---	78-210	100% < 1	"	Iron melting electric induction furnace

* The seasonal operation schedule is not available in the Michigan emission inventory file.

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING * SCHEDULE 1= Jan/March 2= Apr/June 3= July/Sept 4= Oct/Dec 1/2/3/4	PROCESS DESCRIPTION
COUNTY: WAYNE (con't)							
A8646	3321	8020	---	6	100% < 1	25/25/25/25	Steel production - EAF
A9036	2083	71758	---	66-958	10% < 20	"	Grain cleaning
A9740	2999	376171	397	632	90% < 10	"	Coke battery
B0673	3362	6890	7	3	100% < 1	"	Brass electric induction
B2081	3351	18715	1	8	100% < 1	"	Brass electric induction
B2116	3312	1499168	4	675	50% < 70	"	Agglomerate blast furnace
		1630135	17	408	90% < 5	"	Steel production - BOF
		179443	19	126	80% < 5	"	Steel production - EAF
		800000	8	4	100% < 2	"	Steel scarfing
B2166	3321	192718	33	93-668	100% < 20	"	Iron melting cupola
		31992	28	38-103	100% < 1	"	Iron electric induction furnace
B2166		1223854	20	306	90% < 5	"	Foundry - BOF
		11781	2	16-110	50% < 15	"	Foundry casting
B2169	3274	343237	35	539	95% < 20	"	Lime calcining
B2800	4911	202783	416	91-185	50% < 10	"	Coal storage
B2810	4911	594115	---	267-541	"	"	Coal storage

* The seasonal operation schedule is not available in the Michigan emission inventory file.

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING* SCHEDULE 1= Jan/March 2= Apr/June 3= July/Sept 4= Oct/Dec 1/2/3/4	PROCESS DESCRIPTION
COUNTY: WAYNE (con't)							
B2811	4911	1795116	---	808-1634	50% < 10	25/25/25/25	Coal storage
B2812	4911	522856	978	235-458	"	"	Coal storage
B3009	4911	141305	208	63-129	"	"	Coal storage
B3011	4911	18010	72	8-16	"	"	Coal storage
B3195	2952	73296	10	27	60% < 4	"	Asphalt batching
B3518	3275	796393	2	1991	95% < 20	"	Gypsum conveying
		24089	---	10	"	"	Gypsum grinding
		296688	52	30	"	"	Gypsum drying
B3120	3274	79138	40	396-724	"	"	Lime calcining kiln
B3567	3241	560000	217	2968	58% < 20	"	Cement manufacturing
B4009	2812	72447	500	33-66	50% < 10	"	Coal storage
B4237	2952	142481	21	52	60% < 4	"	Asphalt batching
B4243	3295	525523	20	570	100% < 100	"	Stone crushing
B6078	3255	36000	11	94	10% < 100	"	Casting refractory crushing

* The seasonal operation schedule is not available in the Michigan emission inventory file.

APPENDIX D

STATE OF MINNESOTA FUGITIVE EMISSION SOURCE INVENTORY

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1=Dec/Feb 2=Mar/May 3=June/Aug 4=Sept/Nov 1/2/3/4	PROCESS DESCRIPTION
COUNTY:	ST. LOUIS						
0001	3531	12000	135	35	60% < 4	0/0/50/50	Asphalt roofing
0013	4911	385400	287	154-331	50% < 10	25/25/25/25	Coal storage
0021	4221	6300000	4	5796-84105	10% < 20	10/20/30/40	Grain handling
0022	4911	25468	172	10-22	50% < 10	42/25/13/20	Coal storage
0023	4221	1106000	6	1018-14765	10% < 20	10/20/35/35	Grain handling
	4221	2216000	34	554	"	"	Grain conveying
	4221	1106000	---	227	"	"	Grain distributing
	4221	114000	18	14-662	"	"	Grain screening
	4221	1110000	555	1021-14819	"	"	Grain handling
0032	1011	74727669	---	1868	100% < 100	25/25/25/25	Iron ore crushing
	1011	10000000	---	500	"	"	Iron ore loading
	1011	10000000	---	14550	"	"	Iron ore storage
0035	3312	521635	912	104-234	100% < 10	16/17/34/33	Coking oven
	3312	363863	164	218	"	"	Coke quenching
	3312	521635	157	522	"	"	Coke oven pushing
	3312	518935	105	104	50% < 10	"	Coal unloading
	3312	518935	391	221	100% < 10	"	Coke oven charging
	3312	---	---	26	"	"	Coke oven door leakage

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1=Dec/Feb 2=Mar/May 3=June/Aug 4=Sept/Nov 1/2/3/4	PROCESS DESCRIPTION
COUNTY:	ST. LOUIS (con't)						
0035	3312	521635	---	6-34	100% < 10	16/17/34/33	Coke oven crushing
0036	2951	50000	---	15	60% < 4	0/0/50/50	Asphalt batching
	2951	50000	---	5	"	"	Asphalt rotary dryer
0037	3531	100000	---	29	"	"	Asphalt roofing
	3531	100000	---	10	"	"	Asphalt rotary dryer
0055	4221	1080000	2	994-14418	10% < 20	0/20/40/40	Grain handling
	4221	540000	42	135	"	"	Grain conveying
	4221	150000	---	38	"	"	Grain distributing
0058	3531	12000	1	3	60% < 4	0/0/50/50	Asphalt rotary dryer
0059	4431	3496	168	1-3	50% < 10	50/30/10/10	Coal storage
COUNTY:	LAKE						
0003	1011	146656	1107	59-126	"	28/27/17/28	Coal storage
	1011	10000000	8	7500	100% < 100	25/25/25/25	Ore conveying
	1011	10000000	1	2500	"	"	Iron ore crushing
	1011	10000000	18568	*	"	"	Others not defined

*This source has potential to be a large fugitive emitter due to the nature of the operation, the large number of undefined point sources, and the large mass throughput annually.

APPENDIX E

STATE OF OHIO FUGITIVE EMISSION SOURCE INVENTORY

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1=Dec/Feb 2=Mar/May 3=June/Aug 4=Sept/Nov 1/2/3/4	PROCESS DESCRIPTION
COUNTY: ASHTABULA (0204-)							
000211	4911	1142750	13074	503-1028	50% < 10	25/25/25/25	Coal storage
010003	3274	96067	52	151	95% < 20	"	Lime calcining
	3399	146169	175	66	50% < 70	"	Feraloy furnace
010143	2816	21220	509	9-19	50% < 10	"	Coal storage
COUNTY: CUYAHOGA (1318-)							
000078	3312	1600000	3064	9	100% < 2	25/25/25/25	Steel Scarfing
		1840000	226	460	90% < 5	"	Steel melting BOF
		1881500	140	847	50% < 70	"	Iron melting blast furnace
		1375320	69	206	35% < 1	"	Iron charging
000103	3341	3376	27	8	100% < 1	30/30/15/25	Brass smelting
000229	2041	187200	40	172-2499	100% < 10	25/25/25/25	Flour milling
000244	4961	127950	418	56-115	50% < 10	"	Coal storage
000245	4911	512316	479	225-461	50% < 10	"	Coal storage
000372	3321	80000	39	55	50% < 20	"	Sand handling
		217600	85	131-1393	50% < 20	"	Foundry shakeout
000958	3295	24000	36	25-47	100% < 100	"	Sand processing

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1=Dec/Feb 2=Mar/May 3=June/Aug 4=Sept/Nov 1/2/3/4	PROCESS DESCRIPTION
COUNTY: CUYAHOGA (con't)							
001007	2819	40800	1020	4	100% < 10	25/25/25/25	Flourspar drying
001169	9661	8800	400	4-8	50% < 10	25/25/25/25	Coal storage
001287	3341	23400	114	8	100% < 2	"	Al chip drying
001613	3323	77369	501	34-70	50% < 10	"	Coal storage
		3038625	167	1367	50% < 70	"	Iron melting blast furnace
		647308	2728	1087	90% < 10	"	Coking oven
		1659830	694	166	90% < 10	"	Coke quenching
001622	3312	718964	636	324	50% < 70	0/44/44/12	Iron melting blase furnace
001721	3323	23625	137	24	100% < 15	25/25/25/25	Chip drying
002490	4941	99240	3548	44-89	50% < 10	"	Coal storage
002662	3295	1000000	63	1000	50% < 70	"	Slag handling
002816	721	6838	302	3-6	50% < 10	"	Coal storage
003287	3299	145600	328	14	100% < 100	"	Sand handling
003295	3295	8000	27	8	100% < 100	30/30/15/25	Mineral milling
003721	2951	167397	124	50	60% < 4	0/20/40/40	Asphalt batching
004160	3433	16800	328	7-15	50% < 10	25/25/25/25	Coal storage

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1=Dec/Feb 2=Mar/May 3=June/Aug 4=Sept/Nov 1/2/3/4	PROCESS DESCRIPTION
COUNTY: CUYAHOGA (con't)							
005539	3321	160000	169	20	55% < 3	25/25/25/25	Iron reloading
120178	3711	161184	8198	71-145	50% < 10	"	Coal storage
	3714	376584	346	723-4903	50% < 20	38/31/9/22	Engine machining operation
120179	3321	303765	293	583-3327	100% < 20	25/25/25/25	Gray iron foundry
120180	3321	30282	58	21	50% < 15	"	Shot reclamation
120180	3321	450960	310	859-5871	100% < 20	"	Iron melting cupola
201633	3479	11864	546	5-11	50% < 10	"	Coal storage
	3544	723731	25	4	100% < 2	"	Steel grinding
201688	3341	80000	38	30	100% < 1	"	Brass scalping processing
202137	3623	9660	502	4-9	50% < 10	"	Coal storage
COUNTY: ERIE (0322-)							
010062	3274	189738	161	298	95% < 20	25/25/25/25	Lime kiln
		23552	---	9-21	50% < 10	"	Coal storage
0200045	3399	9619	34	4-9	50% < 10	"	Coal storage
020183	3274	3002000	150	4713	95% < 20	11/26/34/29	Limestone crushing & screening

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1=Dec/Feb 2=Mar/May 3=June/Aug 4=Sept/Nov 1/2/3/4	PROCESS DESCRIPTION
COUNTY: LAKE (0243-)							
000165	2821	12789	60	6-12	50% < 10	25/25/25/25	Coal storage
020456	3312	157000	196	264	90% < 10	"	Coking oven
030257	3274	367787	78	577	95% < 20	"	Lime calcining kiln
		79113	---	32-71	50% < 10	"	Coal storage
160009	4911	2680400	32609	1072-2412	50% < 10	"	Coal storage
160174	3069	15487	39	6-14	50% < 10	"	Coal storage
COUNTY: LORAIN (1947-)							
030013	4911	3529133	9804	1552-3176	50% < 10	25/25/25/25	Coal storage
080049	4911	401200	7794	177-361	50% < 10	"	Coal storage
080229	3312	2097228	1687	944	50% < 70	8/52/26/14	Iron melting blast furnace
		526876	684	885	90% < 10	25/25/25/25	Coke oven
		2441016	63	610	90% < 5	23/28/26/23	Steel melting BOF
		574060	86	580	50% < 70	14/32/25/29	Slag handling
		218003	3127	138-398	10% < 5	12/27/33/28	Sintering
COUNTY: LUCAS (0448-)							
010064	2043	30000	32	3-120	10% < 20	25/25/25/25	Cereal drying
		45000	32	23-45	10% < 20	"	Cereal puffing

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1=Dec/Feb 2=Mar/May 3=June/Aug 4=Sept/Nov 1/2/3/4	PROCESS DESCRIPTION
COUNTY: LUCAS (con't)							
010086	4911	410908	744	181-370	50% < 10	25/25/25/25	Coal storage
010203	5153	825000	423	701-9570	10% < 20	40/10/10/40	Grain drying
010247	8092	14910	463	7-13	50% < 10	25/25/25/25	Coal storage
010313	5153	1707870	862	1451-19811	10% < 20	0/30/10/60	Grain drying
010397	3312	300692	355	135	50% < 70	25/25/25/25	Iron melting blast furnace
		390500	683	656	90% < 10	"	Coke oven
		390500	203	234	90% < 10	"	Coke quenching
010495	5153	779655	1356	663-9043	10% < 20	0/30/30/40	Grain handling
010699	5053	306000	155	260-3549	10% < 20	25/15/15/45	Grain handling
020006	4911	1590000	1079	700-1431	50% < 10	25/25/25/25	Coal storage
COUNTY: OTTAWA (0362-)							
000078	3275	23000	71	10-21	50% < 10	25/25/25/25	Coal storage
000088	1422	125110	131	196	95% < 20	"	Limestone crushing
010011	3275	200400	180	315	95% < 20	20/22/28/30	Gypsum grinding & calcining

APPENDIX F

STATE OF WISCONSIN FUGITIVE EMISSION SOURCE INVENTORY

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1= Jan/March 2= Apr/June 3= July/Sept 4= Oct/Dec 1/2/3/4	PROCESS DESCRIPTION
COUNTY: DOOR							
150001	2951	80983	12	27	60% < 4	0/30/40/30	Asphalt batching
150007	2951	13313	30	4	"	"	Asphalt batching
COUNTY: DOUGLAS							
160001	4463	119588	9.06	28-419	10% < 20	15/30/30/25	Truck loading
		1171625		48-4101	"	"	Grain shipping
		755136		21-2265	"	"	Train loading
		109686		21-943	"	"	Grain cleaning
160002	4221	1678956	198	1294-19238	"	3/26/30/41	Grain unloading
		1683972		2-2938	"	"	Grain shipping
160003	3274	232563	9	370	90% < 20	26/26/26/22	Lime manufacturing
		475346	---	48	"	"	Limestone receiving
		465126	---	230	"	"	Lime storage
		59480	---	7	"	"	Lime loading - truck
		178440	---	21	"	"	Lime loading - railcar
160005	2083	2645000	113	2038-30007	10% < 20	10/40/40/10	Grain unloading - railcar
		2629425		4-4545	"	"	Grain loading

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1= Jan/March 2= Apr/June 3= July/Sept 4= Oct/Dec 1/2/3/4	PROCESS DESCRIPTION
COUNTY: DOUGLAS (con't)							
160006	2041	876000		683-9964	10% < 20	27/5/25/43	Grain unloading
		840000	5	1-1470	"	"	Grain loading
		50000		1-75	"	"	Grain loading
160008	3241	550000	---	303-340	58% < 20	10/30/30/30	Cement & clinker unloading
		200000	2	450	"	"	Clinker storage & reclamation
		200000	57	10	"	"	Clinker grinding
		550000	65	65	"	"	Cement loading
160011	5153	179764	4	1-314	10% < 20	16/22/37/25	Grain shipping
		196516	34	149-2221	"	"	Grain unloading
160013	2041	142500	2	121-1653	"	30/25/20/25	Wheat handling
160017	5052	3400000	---	2893-45390	100% < 100	15/25/30/30	Rail unloading
		3400000	---	659	"	"	Ore storage
160020	2951	42463	14	14	60% < 4	25/25/25/25	Asphalt batching
160034	4789	11100000	1226	2300	100% < 100	"	Taconite unloading
		4000000	---	4820	"	"	Stacking pile reclamation (taconite)
160037	2951	1900	86	6	60% < 4	0/30/40/30	Asphalt batching

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1= Jan/March 2= Apr/June 3= July/Sept 4= Oct/Dec 1/2/3/4	PROCESS DESCRIPTION
COUNTY: KENOSHA							
30001	3351	20892	7	1-2	100% < 1	0/40/40/20	Brass melting
30021	2951	37000	17	7	60% < 4	0/20/60/20	Asphalt batching
COUNTY: KEWAUNEE							
310001	2951	60000	1	20	"	"	Asphalt batching
310002	2436	3265	49	2	50% < 30	"	Wood working
COUNTY: MANITOWOC							
360004	3241	42965	5	255-434	95% < 20	0/12/44/44	Rotary kiln
360005	2951	100000	2	33	60% < 4	"	Asphalt batching
360006	4931	104722	7436	49-97	50% < 10	25/25/25/25	Coal storage
360007	3274	38118	65	76-96	95% < 20	"	Lime kiln
360011	2951	61433	28	20	60% < 4	0/20/60/20	Asphalt batching
360035	2951	82000	123	27	"	0/30/40/30	Asphalt batching
360047	3361	1848	5	2	100% < 2	25/25/25/25	Reverberating furnace
COUNTY: MARINETTE							
380006	2496	1203	37	1	50% < 10	28/33/20/19	Coal storage

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1= Jan/March 2= Apr/June 3= July/Sept 4= Oct/Dec 1/2/3/4	PROCESS DESCRIPTION
COUNTY: MARINETTE (con't)							
380006	2496	27000	61	27	100% < 100	28/33/20/19	Coarse material handling
380008	3999	2558	20	1-2	50% < 10	25/25/25/25	Coal storage
380018	2951	18000	3	6	60% < 4	0/30/40/30	Asphalt batching
COUNTY: MILWAUKEE							
410002	2082	317601	---	239-2413	10% < 20	20/30/30/20	Grain handling
		15560	---	1-62	"	"	Grain drying
410003	2082	5640	12	1-23	"	21/30/29/20	Grain drying
		50850	3	38-387	"	"	Grain handling
410009	4911	2361	36	1-2	50% < 10	36/36/14/14	Coal storage
410006	3714	4295	---	5	100% < 2	27/25/23/25	Zinc melting
410014	3272	16000	---	3	20% < 5	15/35/35/15	Sand & roto kiln
410027	3079	25000	2	81-347	10% < 20	25/26/27/22	Arc melt furnace
410045	2082	41759	21	4-167	"	"	Grain drying
		163268	---	123-1232	"	"	Grain rec. handling
		41759	---	3-167	"	"	Grain loading
410054	4961	60323	4289	28-56	50% < 10	28/23/22/27	Coal storage

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1= Jan/March 2= Apr/June 3= July/Sept 4= Oct/Dec 1/2/3/4	PROCESS DESCRIPTION
COUNTY: MILWAUKEE (con't)							
410058	2951	70000	16	23	60% < 4	0/26/47/27	Asphalt batching
410059	2951	45000	28	15	"	0/30/40/30	Asphalt batching
410051	2951	97500	13	32	"	0/13/54/33	Asphalt batching
410060	3519	32899	33	15	100% < 2	28/22/22/28	Al melting
		4488	---	3	"	"	Zinc melting
410076	3325	24554	2	79-290	80% < 5	25/25/25/25	Steel melting - EAF
		122000	---	81	50% < 15	"	Sand muller
		61000	2	84-830	"	"	Steel casting
		30700	---	21-209	"	"	Casting cleaning
410077	3312	262942	447	519-2029	90% < 10	28/25/23/24	Coke oven
410078	2951	31800	1	10	60% < 4	0/25/50/25	Asphalt batching
410081	2873	37124	39	4-148	10% < 20	25/25/25/25	Grain drying
410091	4911	2554055	5586	1187-2362	50% < 10	"	Coal storage
410096	3462	134830	128	----	----	"	Stock heat furnace
		134830	---	11-54	50% < 15	"	Abrasive cleaning
410100	3321	2253	---	2	100% < 20	"	Iron foundry cupola
		9901	1	1-16	100% < 1	"	Iron melting - EAF

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1= Jan/March 2= Apr/June 3= July/Sept 4= Oct/Dec 1/2/3/4	PROCESS DESCRIPTION
COUNTY: MILWAUKFE (con't)							
410100	3362	866	20	1-3	100% < 1	25/25/25/25	Bronze melt
410103	4911	731475	1420	340-677	50% < 10	24/24/23/24	Coal storage
410105	2951	21510	24	7	60% < 4	0/36/43/21	Asphalt batching
410106	3321	33800	5	23-230	100% < 30	25/25/25/25	Shot blast grinding
		5769	---	4	100% < 1	*	Induction melt gray
410110	3241	75000	18	4	58% < 20	10/30/40/20	Cement grinding
		76000	---	9	*	*	Cement truck loading
410126	3324	36729	1	92-184	80% < 5	25/25/25/25	Electric arc melting
		14811	---	10	50% < 15	*	Sand preparation
410128	3321	4600	4	11-79	10% < 20	25/25/20/30	Gray iron foundry
410133	2083	82000	5	75-1095	*	25/25/25/25	Grain handling
410134	3325	18100	---	45-91	100% < 1	*	Electric arc furnace
410136	2951	61000	32	20	60% < 4	8/31/37/24	Asphalt batching
410137	2041	280000	28	26-374	10% < 20	25/25/25/25	Corn mill
410138	3362	18975	---	38-172	100% < 20	28/27/20/25	Melting sand foundry
410140	3322	2504	4	5-7	*	25/25/25/25	Iron melting cupola
		3990	5	2	*	*	Air melting furnace

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1= Jan/March 2= Apr/June 3= July/Sept 4= Oct/Dec 1/2/3/4	PROCESS DESCRIPTION
COUNTY: MILWAUKEE (con't)							
410140	3322	1340	---	1-4	100% < 20	25/25/25/25	Core oven
410142	3325	32000	---	21	50% < 15	20/30/20/30	Sand drying
		10962	1	47-75	100% < 1	*	Steel melting - EAF
		16443	1	41-82	*	*	Electric arc melt
		40000	---	27-272	50% < 15	*	Casting cleaning
410143	2083	288060	11	265-845	10% < 20	25/25/25/25	Grain handling
410144	3566	42981	1	23-74	100% < 1	*	Steel melting - EAF
410146	3341	10800	9	15-85	100% < 16	*	Lead smelting
410153	3321	21100	18	39-59	100% < 20	25/25/15/35	Iron melting cupola
		25037	---	17	50% < 15	*	Green sand preparation
		13392	---	9-91	*	*	Foundry shakeout
410154	3322	19600	15	15	100% < 1	30/30/15/25	Electric induction melting
		6300	---	3	50% < 15	*	Casting cleaning & finishing
		345000	---	21-221	50% < 15	*	Sand shakeout
410155	3321	7847	---	6-78	100% < 20	25/25/15/35	Iron melting cupola
		22560	---	15-153	50% < 15	*	Casting shakeout
410157	3223	19750	8	42-343	100% < 20	30/30/20/20	Iron melting cupola

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1= Jan/March 2= Apr/June 3= July/Sept 4= Oct/Dec 1/2/3/4	PROCESS DESCRIPTION
COUNTY: MILWAUKEE (con't)							
410166	3321	93282	---	64	50% < 15	28/22/22/28	Mulling opt
		93282	---	64	"	"	Mold making
		93282	---	64-634	100% < 20	"	Casting shakeout
		23373	14	2-72	"	"	Iron melting cupola
410167	3714	65420	2	61-1883	"	"	Iron melting cupola
		3840	---	3	50% < 20	"	Sand storage
		614400	---	648-6057	"	"	Mold core mulling
410253	3325	25213	1	82-350	100% < 1	25/25/25/25	Steel melting
		3714	---	1-11	90% < 10	"	Coke oven
410256	3532	34610	---	112-371	100% < 1	"	Electric melting furnace
		77700	---	52	50% < 15	"	Sand mixing & shakeout
		706	---	1-8	100% < 1	"	Electric induction furnace
		27000	---	2-11	50% < 15	"	Casting cleaning
COUNTY: OZAUKEE							
460016	4911	705808	1016	328-653	50% < 10	"	Coal storage
460021	2951	30000	20	10	60% < 4	0/30/40/30	Asphalt batching

I.D.	SIC	ANNUAL PROCESS ton/yr	CONTROLLED POINT SOURCE EMISSION ton/yr	POTENTIAL FUGITIVE EMISSION ton/yr	PARTICLE SIZE micron	OPERATING SCHEDULE 1= Jan/March 2= Apr/June 3= July/Sept 4= Oct/Dec 1/2/3/4	PROCESS DESCRIPTION
COUNTY: RACINE							
520016	2951	21000	---	7	60% < 4	0/30/40/30	Asphalt batching
520027	1422	800000	---	800	95% < 20	25/22/26/27	Limestone crushing
520032	2951	91000	8	30	60% < 4	"	Asphalt batching
520888	3325	73297	2	138-749	100% < 1	"	Electric furnace
		12000	---	4-37	90% < 10	"	Core oven
		872640	5	589	50% < 15	"	Sand preparation
		120000	---	82	"	"	Shot blast
COUNTY: SHEBOYGAN							
600004	3431	171210	128	297-1345	100% < 1	25/25/25/25	Electric induction furnace
600007	4911	202989	2024	94-188	50% < 10	"	Coal storage

APPENDIX G

LAKE IMPACT FROM THE STATE OF ILLINOIS

STATE OF: Illinois COUNTY: Cook

SIC: 2400 PROCESS DESCRIPTION: Wood Working

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 62 POTENTIAL LAKE IMPACT (tons/yr): 62

PARTICLE SIZE: 1% less than 30 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	10	13	24	15
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	10	13	24	15

SIC: 4911 PROCESS DESCRIPTION: Coal Storage

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 1932 POTENTIAL LAKE IMPACT (tons/yr): 1932

PARTICLE SIZE: 50% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	483	483	483	483
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	483	483	483	483

STATE OF: Illinois COUNTY: Cook

SIC: 4221 PROCESS DESCRIPTION: Grain Handling

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 7849-71556 POTENTIAL LAKE IMPACT (tons/yr): 7849-71556

PARTICLE SIZE: 10% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	1174-13455	1444-12276	2089-16949	3142-28876
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	1174-13455	1444-12276	2089-16949	3142-28876

SIC: 3341 PROCESS DESCRIPTION: Copper Smelting

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 189 POTENTIAL LAKE IMPACT (tons/yr): 189

PARTICLE SIZE: 100% less than 1 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	47	48	46	48
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	47	48	46	48

STATE OF: Illinois COUNTY: Cook

SIC: 3321 PROCESS DESCRIPTION: Iron Cupola

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 10 POTENTIAL LAKE IMPACT (tons/yr): 10

PARTICLE SIZE: 100% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	2	3	2	3
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	2	3	2	3

SIC: 2951 PROCESS DESCRIPTION: Asphalt Batching

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 450 POTENTIAL LAKE IMPACT (tons/yr): 450

PARTICLE SIZE: 60% less than 4 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	21	73	197	159
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	21	73	197	159

STATE OF: Illinois COUNTY: Cook

SIC: 3462 PROCESS DESCRIPTION: Steel Melting - EAF

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 314 - 342 POTENTIAL LAKE IMPACT (tons/yr): 314 - 342

PARTICLE SIZE: 80% less than 5 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	78-85	79-86	79-86	78-85
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	78-85	79-86	79-86	78-85

SIC: 3270 PROCESS DESCRIPTION: Concrete Batching

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 72 POTENTIAL LAKE IMPACT (tons/yr): 72

PARTICLE SIZE: 20% less than 5 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	11	17	21	23
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	11	17	21	23

STATE OF: Illinois COUNTY: Cook

SIC: 3270 PROCESS DESCRIPTION: Cement Manufacturing

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 129 POTENTIAL LAKE IMPACT (tons/yr): 129

PARTICLE SIZE: 50% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	14	30	46	39
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	14	30	46	39

SIC: 33 PROCESS DESCRIPTION: Iron Finishing - Shot Blast

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 282-478 POTENTIAL LAKE IMPACT (tons/yr): 282-478

PARTICLE SIZE: 50% less than 15 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	70-119	71-120	71-120	70-119
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	70-119	71-120	71-120	70-119

STATE OF: Illinois COUNTY: Cook

SIC: 3340 PROCESS DESCRIPTION: Al Smelting - Reverboratory fur.

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 5 POTENTIAL LAKE IMPACT (tons/yr): 5

PARTICLE SIZE: 100% less than 1 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	1	2	1	1
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	1	2	1	1

SIC: 2816 PROCESS DESCRIPTION: PbO Milling

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 6 POTENTIAL LAKE IMPACT (tons/yr): 6

PARTICLE SIZE: 100% less than 16 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	1	2	2	1
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	1	2	2	1

STATE OF: Illinois COUNTY: Cook

SIC: 3340 PROCESS DESCRIPTION: Zinc Smelting

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 18-46 POTENTIAL LAKE IMPACT (tons/yr): 18-46

PARTICLE SIZE: 100% less than 1 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	4-11	5-12	5-12	4-11
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	4-11	5-12	5-12	4-11

SIC: 3274 PROCESS DESCRIPTION: Lime Handling

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 894 POTENTIAL LAKE IMPACT (tons/yr): 894

PARTICLE SIZE: 90% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	223	224	224	223
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	223	224	224	223

STATE OF: Illinois COUNTY: Cook

SIC: 3312 PROCESS DESCRIPTION: Iron Melting - Blast Furnace

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 2201-5127 POTENTIAL LAKE IMPACT (tons/yr): 2201-5127

PARTICLE SIZE: 50% less than 70 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	550-1282	550-1282	550-1282	550-1282
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	550-1282	550-1282	550-1282	550-1282

SIC: 3312 PROCESS DESCRIPTION: Iron Ore Handling

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 2478 POTENTIAL LAKE IMPACT (tons/yr): 2478

PARTICLE SIZE: 50% less than 180 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	619	620	620	619
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	619	620	620	619

STATE OF: Illinois COUNTY: Cook

SIC: 3312 PROCESS DESCRIPTION: Sintering

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 2219-3390 POTENTIAL LAKE IMPACT (tons/yr): 2219-3390

PARTICLE SIZE: 10% less than 15 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	555-847	555-848	555-848	555-847
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	555-847	555-848	555-848	555-847

SIC: 3312 PROCESS DESCRIPTION: Slag Handling

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 21 POTENTIAL LAKE IMPACT (tons/yr): 21

PARTICLE SIZE: 50% less than 17 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	5	5	5	5
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	5	5	5	5

STATE OF: Illinois COUNTY: Cook

SIC: 3312 PROCESS DESCRIPTION: Cooking Process

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 2467 POTENTIAL LAKE IMPACT (tons/yr): 2467

PARTICLE SIZE: 90% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	617	617	617	617
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	617	617	617	617

SIC: 3399 PROCESS DESCRIPTION: Core Oven

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 181-222 POTENTIAL LAKE IMPACT (tons/yr): 181-222

PARTICLE SIZE: 50% less than 15 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	45-55	45-56	45-56	45-55
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	45-55	45-56	45-56	45-55

STATE OF: Illinois COUNTY: Cook

SIC: 3312 PROCESS DESCRIPTION: Steel Melting - BOF

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 258 POTENTIAL LAKE IMPACT (tons/yr): 258

PARTICLE SIZE: 90% less than 5 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	64	65	65	64
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	64	65	65	64

SIC: 3312 PROCESS DESCRIPTION: Unpaved Road

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 1070 POTENTIAL LAKE IMPACT (tons/yr): 1070

PARTICLE SIZE: ---

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	267	268	268	267
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	267	268	268	267

STATE OF: Illinois COUNTY: Cook

SIC: 3312 PROCESS DESCRIPTION: Iron Casting

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 886 - 5659 POTENTIAL LAKE IMPACT (tons/yr): 886 - 5659

PARTICLE SIZE: 100% less than 15 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	221-1415	222-1415	222-1415	221-1415
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	221-1415	222-1415	222-1415	221-1415

SIC: 2499 PROCESS DESCRIPTION: Aggregate Handling

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 1728 POTENTIAL LAKE IMPACT (tons/yr): 1728

PARTICLE SIZE: ---

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	432	432	432	432
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	432	432	432	432

STATE OF: Illinois COUNTY: Lake

SIC: 11 PROCESS DESCRIPTION: Coal Storage

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 23698-31379 POTENTIAL LAKE IMPACT (tons/yr): 23698-31379

PARTICLE SIZE: 50% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	5924-7845	5925-7845	5925-7845	5924-7845
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	5924-7845	5925-7845	5925-7845	5924-7845

SIC: 3341 PROCESS DESCRIPTION: Iron Melting - Reverberatory Furnace

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 25 POTENTIAL LAKE IMPACT (tons/yr): 25

PARTICLE SIZE: 100% less than 1 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	6	6	6	6
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	6	6	6	6

STATE OF: Illinois COUNTY: Lake

SIC: 3341 PROCESS DESCRIPTION: Iron Cupola

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 11 POTENTIAL LAKE IMPACT (tons/yr): 11

PARTICLE SIZE: 100% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	2	3	2	4
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	2	3	2	4

SIC: 2951,3273 PROCESS DESCRIPTION: Unpaved Road

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 70 POTENTIAL LAKE IMPACT (tons/yr): 70

PARTICLE SIZE: ---

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	8	8	24	22
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	8	8	24	22

STATE OF: Illinois COUNTY: Lake

SIC: 3275 PROCESS DESCRIPTION: Rock Handling

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 32 POTENTIAL LAKE IMPACT (tons/yr): 32

PARTICLE SIZE: 100% less than 100 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	7	8	9	8
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	7	8	9	8

SIC: 2951 PROCESS DESCRIPTION: Asphalt Batching

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 425 POTENTIAL LAKE IMPACT (tons/yr): 425

PARTICLE SIZE: 60% less than 4 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	20	40	211	154
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	20	40	211	154

STATE OF: Illinois COUNTY: Lake

SIC: 3275 PROCESS DESCRIPTION: Gypsum Manufacturing

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 65 POTENTIAL LAKE IMPACT (tons/yr): 65

PARTICLE SIZE: 95% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	13	16	20	16
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	13	16	20	16

SIC: 3241 PROCESS DESCRIPTION: Cement Manufacturing

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 152 POTENTIAL LAKE IMPACT (tons/yr): 152

PARTICLE SIZE: 58% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	15	46	46	45
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	15	46	46	45

STATE OF: Illinois

COUNTY: Lake

SIC: 3273

PROCESS DESCRIPTION: Concrete Batching

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 44

POTENTIAL LAKE IMPACT (tons/yr): 44

PARTICLE SIZE: 20% less than 5 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	5	9	16	13
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	5	9	16	13

APPENDIX H

LAKE IMPACT FROM THE STATE OF INDIANA

STATE OF: Indiana COUNTY: Lake

SIC: 2046 PROCESS DESCRIPTION: Grain Handling

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 5819-19406 POTENTIAL LAKE IMPACT (tons/yr): 5819-19406

PARTICLE SIZE: 10% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	1455-4852	1455-4852	1455-4852	1455-4852
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	1455-4852	1455-4852	1455-4852	1455-4852

SIC: 3325 PROCESS DESCRIPTION: Foundry Sand Handling

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 218-323 POTENTIAL LAKE IMPACT (tons/yr): 218-323

PARTICLE SIZE: 50% less than 15 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	54-81	56-81	55-81	54-81
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	54-81	56-81	55-81	54-81

STATE OF: Indiana COUNTY: Lake

SIC: 3325 PROCESS DESCRIPTION: Foundry Cleaning

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 641-6733 POTENTIAL LAKE IMPACT (tons/yr): 641-6733

PARTICLE SIZE: 50% less than 15 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	160-1683	160-1683	160-1683	160-1683
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	160-1683	160-1683	160-1683	160-1683

SIC: 3325 PROCESS DESCRIPTION: Steel Melting - Electric

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 325 POTENTIAL LAKE IMPACT (tons/yr): 325

PARTICLE SIZE: 80% less than 5 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	81	81	81	81
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	81	81	81	81

STATE OF: Indiana COUNTY: Lake

SIC: 2951 PROCESS DESCRIPTION: Asphalt Batching

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 220 POTENTIAL LAKE IMPACT (tons/yr): 220

PARTICLE SIZE: 60% less than 4 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	3	56	93	68
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	3	56	93	68

SIC: 3341 PROCESS DESCRIPTION: Lead Smelting

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 341-952 POTENTIAL LAKE IMPACT (tons/yr): 341-952

PARTICLE SIZE: 100% less than 16 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	85-238	85-238	85-238	85-238
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	85-238	85-238	85-238	85-238

STATE OF: Indiana COUNTY: Lake

SIC: 3312 PROCESS DESCRIPTION: Coking Process

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 46619 POTENTIAL LAKE IMPACT (tons/yr): 46619

PARTICLE SIZE: 90% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	11655	11655	11655	11655
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	11655	11655	11655	11655

SIC: 3312 PROCESS DESCRIPTION: Steel Melting - OHF

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 160 POTENTIAL LAKE IMPACT (tons/yr): 160

PARTICLE SIZE: 75% less than 5 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	40	40	40	40
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	40	40	40	40

STATE OF: Indiana COUNTY: Lake

SIC: 3312 PROCESS DESCRIPTION: Steel Melting - BOF

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 5427 POTENTIAL LAKE IMPACT (tons/yr): 5427

PARTICLE SIZE: 90% less than 5 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	1357	1357	1357	1357
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	1357	1357	1357	1357

SIC: 3312 PROCESS DESCRIPTION: Iron Melting - Blast Furnace

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 6161 POTENTIAL LAKE IMPACT (tons/yr): 6161

PARTICLE SIZE: 50% less than 70 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	1540	1540	1540	1540
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	1540	1540	1540	1540

STATE OF: Indiana COUNTY: Lake

SIC: 4911 PROCESS DESCRIPTION: Coal Storage

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 1569-3365 POTENTIAL LAKE IMPACT (tons/yr): 1569-3365

PARTICLE SIZE: 50% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	392-841	392-841	392-841	392-841
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	392-841	392-841	392-841	392-841

SIC: 3312 PROCESS DESCRIPTION: Steel Scarfing

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 50 POTENTIAL LAKE IMPACT (tons/yr): 50

PARTICLE SIZE: 100% less than 2 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	12	13	12	13
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	12	13	12	13

STATE OF: Indiana COUNTY: Lake

SIC: 3312 PROCESS DESCRIPTION: Sintering

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 3120-8969 POTENTIAL LAKE IMPACT (tons/yr): 3120-8969

PARTICLE SIZE: 10% less than 5 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	780-2242	780-2242	780-2242	780-2242
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	780-2242	780-2242	780-2242	780-2242

SIC: 3275 PROCESS DESCRIPTION: Gypsum Product

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 189 POTENTIAL LAKE IMPACT (tons/yr): 189

PARTICLE SIZE: 95% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	47	47	47	47
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	47	47	47	47

STATE OF: Indiana COUNTY: Lake

SIC: 3241 PROCESS DESCRIPTION: Cement Manufacturing

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 3456-5966 POTENTIAL LAKE IMPACT (tons/yr): 3456-5966

PARTICLE SIZE: 58% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	864-1491	864-1492	864-1492	864-1491
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	864-1491	864-1492	864-1492	864-1491

SIC: 3341 PROCESS DESCRIPTION: Copper Smelting

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 45 POTENTIAL LAKE IMPACT (tons/yr): 45

PARTICLE SIZE: 100% less than 1 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	11	11	11	11
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	11	11	11	11

STATE OF: Indiana COUNTY: Lake

SIC: 3341 PROCESS DESCRIPTION: Zinc Smelting

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 9 POTENTIAL LAKE IMPACT (tons/yr): 9

PARTICLE SIZE: 100% less than 1 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	2	2	2	2
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	2	2	2	2

SIC: 3274 PROCESS DESCRIPTION: Lime Calcining

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 954 POTENTIAL LAKE IMPACT (tons/yr): 954

PARTICLE SIZE: 95% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	238	239	239	238
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	238	239	239	238

STATE OF: Indiana COUNTY: Lake

SIC: 3341 PROCESS DESCRIPTION: Aluminum Smelting Furnace

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 207 POTENTIAL LAKE IMPACT (tons/yr): 207

PARTICLE SIZE: 100% less than 2 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	52	52	52	52
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	52	52	52	52

SIC: 3273 PROCESS DESCRIPTION: Concrete Batching

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 453 POTENTIAL LAKE IMPACT (tons/yr): 453

PARTICLE SIZE: 20% less than 5 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	92	112	147	102
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	92	112	147	102

STATE OF: Indiana COUNTY: Lake

SIC: 1499 PROCESS DESCRIPTION: Mineral Handling

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 383

POTENTIAL LAKE IMPACT (tons/yr): 383

PARTICLE SIZE: 100% less than 100 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	81	111	111	80
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	81	111	111	80

STATE OF: Indiana COUNTY: Porter

SIC: 3312 PROCESS DESCRIPTION: Iron Melting - Blast Furnace

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 1502 POTENTIAL LAKE IMPACT (tons/yr): 872

PARTICLE SIZE: 50% less than 70 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	375	376	376	375
WIND FREQUENCY (% impact on lake)	0	66	100	66
SEASONAL IMPACT (tons)	0	248	376	248

SIC: 3312 PROCESS DESCRIPTION: Steel Melting - BOF

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 1976 POTENTIAL LAKE IMPACT (tons/yr): 1146

PARTICLE SIZE: 90% less than 5 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	494	494	494	494
WIND FREQUENCY (% impact on lake)	0	66	100	66
SEASONAL IMPACT (tons)	0	326	494	326

STATE OF: Indiana COUNTY: Porter

SIC: 3312 PROCESS DESCRIPTION: Steel Scarfing

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 11

POTENTIAL LAKE IMPACT (tons/yr): 7

PARTICLE SIZE: 100% less than 2 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	3	3	3	3
WIND FREQUENCY (% impact on lake)	0	66	100	66
SEASONAL IMPACT	0	2	3	2

SIC: 3312 PROCESS DESCRIPTION: Coking Process

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 4100

POTENTIAL LAKE IMPACT (tons/yr): 2378

PARTICLE SIZE: 90% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	1025	1025	1025	1025
WIND FREQUENCY (% impact on lake)	0	66	100	66
SEASONAL IMPACT (tons)	0	677	1025	677

STATE OF: Indiana COUNTY: Porter

SIC: 3312 PROCESS DESCRIPTION: Sintering

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 1294-3719 POTENTIAL LAKE IMPACT (tons/yr): 752-2158

PARTICLE SIZE: 10% less than 5 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	323-930	324-930	324-930	323-930
WIND FREQUENCY (% impact on lake)	0	66	100	66
SEASONAL IMPACT (tons)	0	214-614	324-930	214-614

SIC: 4911 PROCESS DESCRIPTION: Coal Storage

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 411-872 POTENTIAL LAKE IMPACT (tons/yr): 239-506

PARTICLE SIZE: 50% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	103-218	103-218	103-218	103-218
WIND FREQUENCY (% impact on lake)	0	66	100	66
SEASONAL IMPACT (tons)	0	68-144	103-218	68-144

STATE OF: Indiana COUNTY: Porter

SIC: 5153 PROCESS DESCRIPTION: Grain Handling

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 59 POTENTIAL LAKE IMPACT (tons/yr): 35

PARTICLE SIZE: 10% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	15	15	15	15
WIND FREQUENCY (% impact on lake)	0	66	100	66
SEASONAL IMPACT (tons)	0	10	15	10

SIC: 2951 PROCESS DESCRIPTION: Asphalt Batching

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 31 POTENTIAL LAKE IMPACT (tons/yr): 22

PARTICLE SIZE: 60% less than 4 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	2	2	9	18
WIND FREQUENCY (% impact on lake)	0	66	100	66
SEASONAL IMPACT (tons)	0	1	9	12

APPENDIX I

LAKE IMPACT FROM THE STATE OF MICHIGAN

STATE OF: Michigan COUNTY: Presque Isle

SIC: 1422 PROCESS DESCRIPTION: Stone Crushing

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 11888 POTENTIAL LAKE IMPACT (tons/yr): 7877

PARTICLE SIZE: 100% less than 100 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	2972	2972	2972	2972
WIND FREQUENCY (% impact on lake)	66	33	66	100
SEASONAL IMPACT (tons)	1962	981	1962	2972

SIC: 1422 PROCESS DESCRIPTION: Coal Storage

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 3-6 POTENTIAL LAKE IMPACT (tons/yr): 2-4

PARTICLE SIZE: 50% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	0.75-1	1-2	1-2	0.75-1
WIND FREQUENCY (% impact on lake)	66	33	66	100
SEASONAL IMPACT (tons)	0.5-1	0.3-0.6	0.7-1.2	0.75-1

STATE OF: Michigan COUNTY: Macomb

SIC: 3273 PROCESS DESCRIPTION: Concrete Batching

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 122

POTENTIAL LAKE IMPACT (tons/yr): 72

PARTICLE SIZE: 20% less than 5 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	30	31	31	30
WIND FREQUENCY (% impact on lake)	100	33	33	66
SEASONAL IMPACT (tons)	30	10	10	22

SIC: 2951 PROCESS DESCRIPTION: Asphalt Batching

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 18

POTENTIAL LAKE IMPACT (tons/yr): 11

PARTICLE SIZE: 60% less than 4 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	4	5	5	4
WIND FREQUENCY (% impact on lake)	100	33	33	66
SEASONAL IMPACT (tons)	4	2	2	3

STATE OF: Michigan COUNTY: Macomb

SIC: 3362 PROCESS DESCRIPTION: EI Furnace

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 2

POTENTIAL LAKE IMPACT (tons/yr): 1

PARTICLE SIZE: 100% less than 1 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	0.5	0.5	0.5	0.5
WIND FREQUENCY (% impact on lake)	100	33	33	66
SEASONAL IMPACT (tons)	0.5	0.2	0.2	0.3

SIC: 3321 PROCESS DESCRIPTION: Foundry Maller/Shake Out

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 69-675

POTENTIAL LAKE IMPACT (tons/yr): 40-392

PARTICLE SIZE: 50% less than 15 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	17-169	17-169	17-169	17-169
WIND FREQUENCY (% impact on lake)	100	33	33	66
SEASONAL IMPACT (tons)	17-169	6-56	6-56	11-111

STATE OF: Michigan COUNTY: Macomb

SIC: 3321 PROCESS DESCRIPTION: Cupola

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 30-343 POTENTIAL LAKE IMPACT (tons/yr): 18-199

PARTICLE SIZE: 100% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	7-86	8-86	8-86	7-86
WIND FREQUENCY (% impact on lake)	100	33	33	66
SEASONAL IMPACT (tons)	7-86	3-28	3-28	5-57

STATE OF: Michigan COUNTY: Huron

SIC: 4911 PROCESS DESCRIPTION: Coal Storage

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 123-249 POTENTIAL LAKE IMPACT (tons/yr): 123-249

PARTICLE SIZE: 50% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	31-62	31-62	31-62	31-62
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	31-62	31-62	31-62	31-62

SIC: 1422 PROCESS DESCRIPTION: Sand Crushing

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 688-1288 POTENTIAL LAKE IMPACT (tons/yr): 688-1288

PARTICLE SIZE: 100% less than 100 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	172-322	172-322	172-322	172-322
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	172-322	172-322	172-322	172-322

STATE OF: Michigan COUNTY: Arenac

SIC: 1422 PROCESS DESCRIPTION: Stone Crushing

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 22-41 POTENTIAL LAKE IMPACT (tons/yr): 22-37

PARTICLE SIZE: 100% less than 100 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	6-10	6-10	6-10	6-10
WIND FREQUENCY (% impact on lake)	100	100	66	100
SEASONAL IMPACT (tons)	6-10	6-10	4-7	6-10

SIC: 3274 PROCESS DESCRIPTION: Lime Milling

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 39 POTENTIAL LAKE IMPACT (tons/yr): 36

PARTICLE SIZE: 95% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	10	10	10	9
WIND FREQUENCY (% impact on lake)	100	100	66	100
SEASONAL IMPACT (tons)	10	10	7	9

STATE OF: Michigan COUNTY: Bay

SIC: 2950 PROCESS DESCRIPTION: Asphalt Batching

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 17

POTENTIAL LAKE IMPACT (tons/yr): 16

PARTICLE SIZE: 60% less than 4 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	4	4	4	5
WIND FREQUENCY (% impact on lake)	100	100	66	100
SEASONAL IMPACT (tons)	4	4	3	5

SIC: 3272 PROCESS DESCRIPTION: Concrete Batching

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 5

POTENTIAL LAKE IMPACT (tons/yr): 4

PARTICLE SIZE: 20% less than 25 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	1	1	2	1
WIND FREQUENCY (% impact on lake)	100	100	66	100
SEASONAL IMPACT (tons)	1	1	1	1

STATE OF: Michigan COUNTY: Bay

SIC: 3321 PROCESS DESCRIPTION: Shakeout and Finishing

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 20-194 POTENTIAL LAKE IMPACT (tons/yr): 18-179

PARTICLE SIZE: 50% less than 15 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	5-49	5-49	5-49	5-49
WIND FREQUENCY (% impact on lake)	100	100	66	100
SEASONAL IMPACT (tons)	5-49	5-49	3-32	5-49

SIC: 4221 PROCESS DESCRIPTION: Grain Drying

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 47-639 POTENTIAL LAKE IMPACT (tons/yr): 44-586

PARTICLE SIZE: 100% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	12-160	12-160	12-160	12-160
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	12-160	12-160	8-106	12-160

STATE OF: Michigan COUNTY: Bay

SIC: 4911 PROCESS DESCRIPTION: Coal Storage

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 501-1014 POTENTIAL LAKE IMPACT (tons/yr): 458-930

PARTICLE SIZE: 50% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	125-254	125-254	125-254	125-254
WIND FREQUENCY (% impact on lake)	100	100	66	100
SEASONAL IMPACT (tons)	125-254	125-254	83-168	125-254

SIC: 3321 PROCESS DESCRIPTION: EAF - Iron and Steel Melting

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 16-31 POTENTIAL LAKE IMPACT (tons/yr): 15-29

PARTICLE SIZE: 100% less than 1 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	4-8	4-8	4-8	4-8
WIND FREQUENCY (% impact on lake)	100	100	66	100
SEASONAL IMPACT (tons)	4-8	4-8	3-5	4-8

STATE OF: Michigan COUNTY: Bay

SIC: 3714 PROCESS DESCRIPTION: Zinc Pot Furnace

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 19 POTENTIAL LAKE IMPACT (tons/yr): 18

PARTICLE SIZE: 100% less than 2 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	5	5	4	5
WIND FREQUENCY (% impact on lake)	100	100	66	100
SEASONAL IMPACT (tons)	5	5	3	5

SIC: 3241 PROCESS DESCRIPTION: Cement Grinding

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 1019-1529 POTENTIAL LAKE IMPACT (tons/yr): 933-1398

PARTICLE SIZE: 58% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	255-382	255-382	255-382	255-382
WIND FREQUENCY (% impact on lake)	100	100	66	100
SEASONAL IMPACT (tons)	255-382	255-382	168-252	255-382

STATE OF: Michigan COUNTY: Ontonagon

SIC: 2631 PROCESS DESCRIPTION: Coal Storage

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 48-97

POTENTIAL LAKE IMPACT (tons/yr): 12-24

PARTICLE SIZE: 50% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	12-24	12-24	12-24	12-24
WIND FREQUENCY (% impact on lake)	0	66	33	0
SEASONAL IMPACT (tons)	0	8-16	4-8	0

SIC: 1021 PROCESS DESCRIPTION: Copper Smelting

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 3931

POTENTIAL LAKE IMPACT (tons/yr): 973

PARTICLE SIZE: 50% less than 37 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	983	983	983	983
WIND FREQUENCY (% impact on lake)	0	66	33	0
SEASONAL IMPACT (tons)	0	649	324	0

STATE OF: Michigan COUNTY: Marquette

SIC: 4911 PROCESS DESCRIPTION: Coal Storage

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 595-1202 POTENTIAL LAKE IMPACT (tons/yr): 347-701

PARTICLE SIZE: 50% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	149-301	149-301	149-301	149-301
WIND FREQUENCY (% impact on lake)	33	0	100	100
SEASONAL IMPACT (tons)	49-99	0	149-301	149-301

STATE OF: Michigan COUNTY: Chippewa

SIC: 1611 PROCESS DESCRIPTION: Asphalt Batching

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 6 POTENTIAL LAKE IMPACT (tons/yr): 4

PARTICLE SIZE: 60% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	1	2	2	1
WIND FREQUENCY (% impact on lake)	33	100	100	0
SEASONAL IMPACT (tons)	0	2	2	0

SIC: 1422 PROCESS DESCRIPTION: Stone Crushing

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 2387-4466 POTENTIAL LAKE IMPACT (tons/yr): 1391-2603

PARTICLE SIZE: 100% less than 100 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	597-1117	597-1117	597-1117	597-1117
WIND FREQUENCY (% impact on lake)	33	100	100	0
SEASONAL IMPACT (tons)	197-369	597-1117	597-1117	0

STATE OF: Michigan COUNTY: Alger

SIC: 2621 PROCESS DESCRIPTION: Coal Storage

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 16-32 POTENTIAL LAKE IMPACT (tons/yr): 9-19

PARTICLE SIZE: 50% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	4-8	4-8	4-8	4-8
WIND FREQUENCY (% impact on lake)	33	0	100	100
SEASONAL IMPACT (tons)	1-3	0	4-8	4-8

STATE OF: Michigan COUNTY: Monroe

SIC: 4911 PROCESS DESCRIPTION: Coal Storage

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 2213-4477 POTENTIAL LAKE IMPACT (tons/yr): 1836-3716

PARTICLE SIZE: 50% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	553-1119	553-1119	553-1119	553-1119
WIND FREQUENCY (% impact on lake)	100	66	66	100
SEASONAL IMPACT (tons)	553-1119	365-739	365-739	553-1119

SIC: 3273 PROCESS DESCRIPTION: Concrete Batching

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 3 POTENTIAL LAKE IMPACT (tons/yr): 3

PARTICLE SIZE: 20% less than 5 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	1	1	1	1
WIND FREQUENCY (% impact on lake)	100	66	66	100
SEASONAL IMPACT (tons)	1	0.6	0.6	1

STATE OF: Michigan COUNTY: Wayne

SIC: 2082 PROCESS DESCRIPTION: Grain Handling

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 761-1695 POTENTIAL LAKE IMPACT (tons/yr): 441-984

PARTICLE SIZE: 10% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	190-424	190-424	190-424	190-424
WIND FREQUENCY (% impact on lake)	100	33	33	66
SEASONAL IMPACT (tons)	190-424	63-140	63-140	125-280

SIC: 3312 PROCESS DESCRIPTION: Steel Scarfing

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 24 POTENTIAL LAKE IMPACT (tons/yr): 14

PARTICLE SIZE: 100% less than 2 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	6	6	6	6
WIND FREQUENCY (% impact on lake)	100	33	33	66
SEASONAL IMPACT (tons)	6	2	2	4

STATE OF: Michigan COUNTY: Wayne

SIC: 3312 PROCESS DESCRIPTION: Steel Production - BOF

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 2259 POTENTIAL LAKE IMPACT (tons/yr): 1310

PARTICLE SIZE: 90% less than 5 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	565	565	565	565
WIND FREQUENCY (% impact on lake)	100	33	33	66
SEASONAL IMPACT (tons)	565	186	186	373

SIC: 3312 PROCESS DESCRIPTION: Steel Melting - EAF

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 1126 POTENTIAL LAKE IMPACT (tons/yr): 652

PARTICLE SIZE: 100% less than 1 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	281	282	282	281
WIND FREQUENCY (% impact on lake)	100	33	33	66
SEASONAL IMPACT (tons)	281	93	93	185

STATE OF: Michigan COUNTY: Wayne

SIC: 3312 PROCESS DESCRIPTION: Coking Process

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 6958 POTENTIAL LAKE IMPACT (tons/yr): 4035

PARTICLE SIZE: 90% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	1739	1740	1740	1739
WIND FREQUENCY (% impact on lake)	100	33	33	66
SEASONAL IMPACT (tons)	1739	574	574	1148

SIC: 3312 PROCESS DESCRIPTION: Iron Sintering

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 897-2579 POTENTIAL LAKE IMPACT (tons/yr): 520-1497

PARTICLE SIZE: 10% less than 5 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	224-645	224-645	224-645	224-645
WIND FREQUENCY (% impact on lake)	100	33	33	66
SEASONAL IMPACT (tons)	224-645	74-213	74-213	148-426

STATE OF: Michigan COUNTY: Wayne

SIC: 3275 PROCESS DESCRIPTION: Gypsum Manufacturing

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 2031 POTENTIAL LAKE IMPACT (tons/yr): 1179

PARTICLE SIZE: 95% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	508	508	508	508
WIND FREQUENCY (% impact on lake)	100	33	33	66
SEASONAL IMPACT (tons)	508	168	168	335

SIC: 3241 PROCESS DESCRIPTION: Cement Manufacturing

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 2968 POTENTIAL LAKE IMPACT (tons/yr): 1722

PARTICLE SIZE: 58% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	742	742	742	742
WIND FREQUENCY (% impact on lake)	100	33	33	66
SEASONAL IMPACT (tons)	742	245	245	490

STATE OF: Michigan COUNTY: Wayne

SIC: 3274 PROCESS DESCRIPTION: Lime Calcining

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 935 - 1263

POTENTIAL LAKE IMPACT (tons/yr): 542-733

PARTICLE SIZE: 95% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	234-316	234-316	234-316	234-316
WIND FREQUENCY (% impact on lake)	100	33	33	66
SEASONAL IMPACT (tons)	234-316	77-104	77-104	154-209

SIC: 2951 PROCESS DESCRIPTION: Asphalt Batching

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 79

POTENTIAL LAKE IMPACT (tons/yr): 47

PARTICLE SIZE: 60% less than 4 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	20	20	20	20
WIND FREQUENCY (% impact on lake)	100	33	33	66
SEASONAL IMPACT (tons)	20	7	7	13

STATE OF: Michigan COUNTY: Wayne

SIC: 3341 PROCESS DESCRIPTION: Lead Smelting

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 11 POTENTIAL LAKE IMPACT (tons/yr): 6

PARTICLE SIZE: 100% less than 16 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	3	3	3	2
WIND FREQUENCY (% impact on lake)	100	33	33	66
SEASONAL IMPACT (tons)	3	1	1	1

SIC: 4911 PROCESS DESCRIPTION: Coal Storage

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 1521-3062 POTENTIAL LAKE IMPACT (tons/yr): 881-1776

PARTICLE SIZE: 50% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	380-765	380-766	380-766	380-765
WIND FREQUENCY (% impact on lake)	100	33	33	66
SEASONAL IMPACT (tons)	380-765	125-253	125-253	251-505

STATE OF: Michigan COUNTY: Wayne

SIC: 3295 PROCESS DESCRIPTION: Stone Crushing

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 570 POTENTIAL LAKE IMPACT (tons/yr): 330

PARTICLE SIZE: 100% less than 100 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	142	143	143	142
WIND FREQUENCY (% impact on lake)	100	33	33	66
SEASONAL IMPACT (tons)	142	47	47	94

SIC: 3255 PROCESS DESCRIPTION: Casting Refractory Crushing

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 94 POTENTIAL LAKE IMPACT (tons/yr): 54

PARTICLE SIZE: 10% less than 100 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	23	24	24	23
WIND FREQUENCY (% impact on lake)	100	33	33	66
SEASONAL IMPACT (tons)	23	8	8	15

STATE OF: Michigan COUNTY: Wayne

SIC: 3312 PROCESS DESCRIPTION: Iron Blast Furnace

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 2125-3243 POTENTIAL LAKE IMPACT (tons/yr): 1231-1882

PARTICLE SIZE: 50% less than 70 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	531-811	531-811	531-811	531-811
WIND FREQUENCY (% impact on lake)	100	33	33	66
SEASONAL IMPACT (tons)	531-811	175-268	175-268	350-535

SIC: 3321 PROCESS DESCRIPTION: Iron Foundry - Cupola

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 182-1274 POTENTIAL LAKE IMPACT (tons/yr): 105-738

PARTICLE SIZE: 100% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	45-318	46-319	46-319	45-318
WIND FREQUENCY (% impact on lake)	100	33	33	66
SEASONAL IMPACT (tons)	45-318	15-105	15-105	30-210

STATE OF: Michigan COUNTY: Wayne

SIC: 3312 PROCESS DESCRIPTION: Iron Ore Handling

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 3192 POTENTIAL LAKE IMPACT (tons/yr): 1851

PARTICLE SIZE: 100% less than 100 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	798	798	798	798
WIND FREQUENCY (% impact on lake)	100	33	33	66
SEASONAL IMPACT (tons)	798	263	263	527

SIC: 3312 PROCESS DESCRIPTION: Casting Cleaning

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 249-2392 POTENTIAL LAKE IMPACT (tons/yr): 143-1387

PARTICLE SIZE: 50% less than 15 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	62-598	62-598	62-598	62-598
WIND FREQUENCY (% impact on lake)	100	33	33	66
SEASONAL IMPACT (tons)	62-598	20-197	20-197	41-395

STATE OF: Michigan COUNTY: Wayne

SIC: 3321 PROCESS DESCRIPTION: Iron Melting - EAF

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 116-313

POTENTIAL LAKE IMPACT (tons/yr): 68-181

PARTICLE SIZE: 100% less than 1 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	29-78	29-78	29-78	29-78
WIND FREQUENCY (% impact on lake)	100	33	33	66
SEASONAL IMPACT (tons)	29-78	10-26	10-26	19-51

SIC: 3362 PROCESS DESCRIPTION: Brass Electric Induction Furnace

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 11

POTENTIAL LAKE IMPACT (tons/yr): 5

PARTICLE SIZE: 100% less than 1 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	3	3	3	3
WIND FREQUENCY (% impact on lake)	100	33	33	66
SEASONAL IMPACT (tons)	3	1	1	1

STATE OF: Michigan COUNTY: Schoolcraft

SIC: 1422 PROCESS DESCRIPTION: Lime Mill

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 5096

POTENTIAL LAKE IMPACT (tons/yr): 2115

PARTICLE SIZE: 95% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	1274	1274	1274	1274
WIND FREQUENCY (% impact on lake)	66	100	0	0
SEASONAL IMPACT (tons)	841	1274	0	0

STATE OF: Michigan COUNTY: Ottawa

SIC: 3272 PROCESS DESCRIPTION: Concrete Batching

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 30 POTENTIAL LAKE IMPACT (tons/yr): 5

PARTICLE SIZE: 20% less than 5 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	7	8	8	7
WIND FREQUENCY (% impact on lake)	66	0	0	0
SEASONAL IMPACT (tons)	5	0	0	0

SIC: 4911 PROCESS DESCRIPTION: Coal Storage

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 663-1340 POTENTIAL LAKE IMPACT (tons/yr): 77-221

PARTICLE SIZE: 50% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	166-335	166-335	166-335	166-335
WIND FREQUENCY (% impact on lake)	66	0	0	0
SEASONAL IMPACT (tons)	77-221	0	0	0

STATE OF: Michigan COUNTY: Ottawa

SIC: 3362 PROCESS DESCRIPTION: Foundry Shakeout

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 25-259 POTENTIAL LAKE IMPACT (tons/yr): 4-43

PARTICLE SIZE: 50% less than 15 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	6-65	6-65	6-65	6-65
WIND FREQUENCY (% impact on lake)	66	0	0	0
SEASONAL IMPACT (tons)	4-43	0	0	0

STATE OF: Michigan COUNTY: Muskegon

SIC: 26 PROCESS DESCRIPTION: Coal Storage

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 731-1476 POTENTIAL LAKE IMPACT (tons/yr): 121-244

PARTICLE SIZE: 50% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	183-369	183-269	183-369	183-369
WIND FREQUENCY (% impact on lake)	66	0	0	0
SEASONAL IMPACT (tons)	121-244	0	0	0

SIC: 3273 PROCESS DESCRIPTION: Concrete Batching

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 11 POTENTIAL LAKE IMPACT (tons/yr): 2

PARTICLE SIZE: 20% less than 5 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	3	3	3	3
WIND FREQUENCY (% impact on lake)	66	0	0	0
SEASONAL IMPACT (tons)	2	0	0	0

STATE OF: Michigan COUNTY: Muskegon

SIC: 3361 PROCESS DESCRIPTION: Foundry Sand Handling

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 152-1482 POTENTIAL LAKE IMPACT (tons/yr): 25-244

PARTICLE SIZE: 50% less than 15 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	38-370	38-371	38-371	38-370
WIND FREQUENCY (% impact on lake)	66	0	0	0
SEASONAL IMPACT (tons)	25-244	0	0	0

SIC: 3714 PROCESS DESCRIPTION: Iron Melting - Cupola

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 12-152 POTENTIAL LAKE IMPACT (tons/yr): 2-25

PARTICLE SIZE: 100% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	3-38	3-38	3-38	3-38
WIND FREQUENCY (% impact on lake)	66	0	0	0
SEASONAL IMPACT (tons)	2-25	0	0	0

STATE OF: Michigan COUNTY: Muskegon

SIC: 3321 PROCESS DESCRIPTION: Steel Melting - Electric Furnace

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 22-40 POTENTIAL LAKE IMPACT (tons/yr): 3-7

PARTICLE SIZE: 100% less than 1 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	5-10	6-10	6-10	5-10
WIND FREQUENCY (% impact on lake)	66	0	0	0
SEASONAL IMPACT (tons)	3-7	0	0	0

SIC: 2951 PROCESS DESCRIPTION: Asphalt Batching

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 14 POTENTIAL LAKE IMPACT (tons/yr): 2

PARTICLE SIZE: 60% less than 4 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	3	4	4	3
WIND FREQUENCY (% impact on lake)	66	0	0	0
SEASONAL IMPACT (tons)	2	0	0	0

STATE OF: Michigan COUNTY: Muskegon

SIC: 3321 PROCESS DESCRIPTION: Coke Oven

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 42-356 POTENTIAL LAKE IMPACT (tons/yr): 7-59

PARTICLE SIZE: 50% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	10-89	11-89	11-89	10-89
WIND FREQUENCY (% impact on lake)	66	0	0	0
SEASONAL IMPACT (tons)	7-59	0	0	0

STATE OF: Michigan COUNTY: Monominee

SIC: 2621 PROCESS DESCRIPTION: Coal Storage

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 26-52 POTENTIAL LAKE IMPACT (tons/yr): 19-39

PARTICLE SIZE: 50% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	6-13	7-13	7-13	6-13
WIND FREQUENCY (% impact on lake)	66	33	100	100
SEASONAL IMPACT (tons)	4-9	2-4	7-13	6-13

STATE OF: Michigan COUNTY: Delta

SIC: 4010 PROCESS DESCRIPTION: Iron Ore Conveying

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 518 POTENTIAL LAKE IMPACT (tons/yr): 216

PARTICLE SIZE: 100% less than 100 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	130	130	130	130
WIND FREQUENCY (% impact on lake)	66	100	0	0
SEASONAL IMPACT (tons)	86	130	0	0

STATE OF: Michigan COUNTY: Mason

SIC: 3297 PROCESS DESCRIPTION: Lime Calcining

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 1025 POTENTIAL LAKE IMPACT (tons/yr): 169

PARTICLE SIZE: 95% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	256	256	256	256
WIND FREQUENCY (% impact on lake)	66	0	0	0
SEASONAL IMPACT (tons)	169	0	0	0

SIC: 3321 PROCESS DESCRIPTION: Iron Melting Cupola

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 9-98 POTENTIAL LAKE IMPACT (tons/yr): 1-16

PARTICLE SIZE: 100% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	2-24	2-25	2-25	2-24
WIND FREQUENCY (% impact on lake)	66	0	0	0
SEASONAL IMPACT (tons)	1-16	0	0	0

STATE OF: Michigan COUNTY: Mason

SIC: 3321 PROCESS DESCRIPTION: Foundry Sand Handling

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 83-828 POTENTIAL LAKE IMPACT (tons/yr): 14-137

PARTICLE SIZE: 50% less than 15 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	21-207	21-207	21-207	21-207
WIND FREQUENCY (% impact on lake)	66	0	0	0
SEASONAL IMPACT (tons)	14-137	0	0	0

SIC: 2951 PROCESS DESCRIPTION: Asphalt Batching

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 20 POTENTIAL LAKE IMPACT (tons/yr): 3

PARTICLE SIZE: 60% less than 4 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	5	5	5	5
WIND FREQUENCY (% impact on lake)	66	0	0	0
SEASONAL IMPACT (tons)	3	0	0	0

STATE OF: Michigan

COUNTY: Mason

SIC: 4452

PROCESS DESCRIPTION: Coal Storage

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 4-8

POTENTIAL LAKE IMPACT (tons/yr): 1

PARTICLE SIZE: 50% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	1-2	1-2	1-2	1-2
WIND FREQUENCY (% impact on lake)	66	0	0	0
SEASONAL IMPACT (tons)	1	0	0	0

STATE OF: Michigan COUNTY: Mackinac

SIC: 1422 PROCESS DESCRIPTION: Stone Crushing

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 4294-8034 POTENTIAL LAKE IMPACT (tons/yr): 4294-8034

PARTICLE SIZE: 100% less than 100 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	1074-2009	1074-2009	1074-2009	1074-2009
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	1074-2009	1074-2009	1074-2009	1074-2009

STATE OF: Michigan COUNTY: Delta

SIC: 1494 PROCESS DESCRIPTION: Asphalt Batching

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 21 POTENTIAL LAKE IMPACT (tons/yr): 8

PARTICLE SIZE: 60% less than 4 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	5	5	5	5
WIND FREQUENCY (% impact on lake)	66	100	0	0
SEASONAL IMPACT (tons)	3	5	0	0

SIC: 9349 PROCESS DESCRIPTION: Coal Storage

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 37-74 POTENTIAL LAKE IMPACT (tons/yr): 15-32

PARTICLE SIZE: 50% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	9-19	9-19	9-19	9-19
WIND FREQUENCY (% impact on lake)	66	100	0	0
SEASONAL IMPACT (tons)	6-13	9-19	0	0

STATE OF: Michigan COUNTY: Berrien

SIC: 3322 PROCESS DESCRIPTION: Foundry Muller

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 358-3557 POTENTIAL LAKE IMPACT (tons/yr): 238-2356

PARTICLE SIZE: 50% less than 15 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	90-889	90-889	90-889	90-889
WIND FREQUENCY (% impact on lake)	66	100	66	33
SEASONAL IMPACT (tons)	59-587	90-889	59-587	30-293

SIC: 3321 PROCESS DESCRIPTION: Foundry Shakeout - Cleaning

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 553-5641 POTENTIAL LAKE IMPACT (tons/yr): 366-3737

PARTICLE SIZE: 50% less than 15 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	138-1410	138-1410	138-1410	138-1410
WIND FREQUENCY (% impact on lake)	66	100	66	33
SEASONAL IMPACT (tons)	91-931	138-1410	91-931	46-465

STATE OF: Michigan COUNTY: Berrien

SIC: 3322 PROCESS DESCRIPTION: EAF - Iron

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 138-346 POTENTIAL LAKE IMPACT (tons/yr): 93-230

PARTICLE SIZE: 100% less than 1 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	35-87	35-87	35-87	35-87
WIND FREQUENCY (% impact on lake)	66	100	66	33
SEASONAL IMPACT (tons)	23-57	35-87	23-57	12-29

SIC: 3322 PROCESS DESCRIPTION: Cupola

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 106-738 POTENTIAL LAKE IMPACT (tons/yr): 72-490

PARTICLE SIZE: 100% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	27-185	27-185	27-185	27-185
WIND FREQUENCY (% impact on lake)	66	100	66	33
SEASONAL IMPACT (tons)	18-22	27-185	18-122	9-61

STATE OF: Michigan COUNTY: Berrien

SIC: 2951 PROCESS DESCRIPTION: Asphalt Batching

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 20

POTENTIAL LAKE IMPACT (tons/yr): 13

PARTICLE SIZE: 60% less than 4 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	5	5	5	5
WIND FREQUENCY (% impact on lake)	66	100	66	33
SEASONAL IMPACT (tons)	3	5	3	2

APPENDIX J

LAKE IMPACT FROM THE STATE OF MINNESOTA

STATE OF: Minnesota COUNTY: St. Louis

SIC: 4221 PROCESS DESCRIPTION: Grain Handling

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 9797-129723 POTENTIAL LAKE IMPACT (tons/yr): 7396-102376

PARTICLE SIZE: 10% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS (Tons)	863-14616	1959-29545	3198-41927	3777-50338
WIND FREQUENCY (% impact on lake)	100	33	66	100
SEASONAL IMPACT (tons)	863-14616	646-9750	2110-27672	3777-50338

SIC: 3312 PROCESS DESCRIPTION: Coke Oven

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 1097-1255 POTENTIAL LAKE IMPACT (tons/yr): 845-966

PARTICLE SIZE: 100% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS (Tons)	176-200	186-213	373-427	362-414
WIND FREQUENCY (% impact on lake)	100	33	66	100
SEASONAL IMPACT (tons)	176-200	61-70	246-282	362-414

STATE OF: Minnesota COUNTY: St. Louis

SIC: 2951 PROCESS DESCRIPTION: Asphalt Batching

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 97

POTENTIAL LAKE IMPACT (tons/yr): 81

PARTICLE SIZE: 60% less than 4 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS (Tons)	0	0	49	49
WIND FREQUENCY (% impact on lake)	100	33	66	100
SEASONAL IMPACT (tons)	0	0	32	49

SIC: 4911 PROCESS DESCRIPTION: Coal Storage Pile Transport

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 269-460

POTENTIAL LAKE IMPACT (tons/yr): 204-347

PARTICLE SIZE: 50% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS (Tons)	60-110	59-107	75-121	75-122
WIND FREQUENCY (% impact on lake)	100	33	66	100
SEASONAL IMPACT (tons)	60-110	19-35	50-80	75-122

STATE OF: Minnesota COUNTY: St. Louis

SIC: 1011 PROCESS DESCRIPTION: Iron Ore

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 16818 POTENTIAL LAKE IMPACT (tons/yr): 12572

PARTICLE SIZE: 100% less than 100 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS (Ton)	4205	4205	4205	4205
WIND FREQUENCY (% impact on lake)	100	33	66	100
SEASONAL IMPACT (tons)	4205	1387	2775	4205

STATE OF: Minnesota COUNTY: Lake

SIC: 1011 PROCESS DESCRIPTION: Iron Ore

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 10,000 POTENTIAL LAKE IMPACT (tons/yr): 7475

PARTICLE SIZE: 100% less than 100 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS (Tons)	2500	2500	2500	2500
WIND FREQUENCY (% impact on lake)	100	33	66	100
SEASONAL IMPACT (tons)	2500	825	1650	2500

SIC: 1011 PROCESS DESCRIPTION: Coal Storage

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 59-126 POTENTIAL LAKE IMPACT (tons/yr): 46-95

PARTICLE SIZE: 50% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS (Tons)	17-35	16-34	10-21	17-35
WIND FREQUENCY (% impact on lake)	100	33	66	100
SEASONAL IMPACT (tons)	17-35	5-11	7-14	17-35

APPENDIX K

LAKE IMPACT FROM THE STATE OF OHIO

STATE OF: Ohio COUNTY: Ashtabula

SIC: 4911 PROCESS DESCRIPTION: Coal Storage

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 512-1047 POTENTIAL LAKE IMPACT (tons/yr): 468-959

PARTICLE SIZE: 50% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	128-262	128-262	128-262	128-262
WIND FREQUENCY (% impact on lake)	66	100	100	100
SEASONAL IMPACT (tons)	84-173	128-262	128-262	128-262

SIC: 3274 PROCESS DESCRIPTION: Lime Calcining

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 151 POTENTIAL LAKE IMPACT (tons/yr): 139

PARTICLE SIZE: 95% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	38	38	38	38
WIND FREQUENCY (% impact on lake)	66	100	100	100
SEASONAL IMPACT (tons)	25	38	38	38

STATE OF: Ohio COUNTY: Ashtabula

SIC: 3399 PROCESS DESCRIPTION: Metal Melting

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 66 POTENTIAL LAKE IMPACT (tons/yr): 62

PARTICLE SIZE: 50% less than 70 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	17	17	17	17
WIND FREQUENCY (% impact on lake)	66	100	100	100
SEASONAL IMPACT (tons)	11	17	17	17

STATE OF: Ohio COUNTY: Cuyahoga

SIC: 3312 PROCESS DESCRIPTION: Steel Melting

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 473

POTENTIAL LAKE IMPACT (tons/yr): 432

PARTICLE SIZE: 90% less than 5 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	118	118	118	118
WIND FREQUENCY (% impact on lake)	66	100	100	100
SEASONAL IMPACT (tons)	78	118	118	118

SIC: 4911 PROCESS DESCRIPTION: Coal Storage

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 453-929

POTENTIAL LAKE IMPACT (tons/yr): 414-849

PARTICLE SIZE: 50% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	113-232	113-232	113-232	113-232
WIND FREQUENCY (% impact on lake)	66	100	100	100
SEASONAL IMPACT (tons)	75-153	113-232	113-232	113-232

STATE OF: Ohio COUNTY: Cuyahoga

SIC: 3312 PROCESS DESCRIPTION: Iron Melting - Blast Furnace

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 3764 POTENTIAL LAKE IMPACT (tons/yr): 3444

PARTICLE SIZE: 50% less than 76 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	941	941	941	941
WIND FREQUENCY (% impact on lake)	66	100	100	100
SEASONAL IMPACT (tons)	621	941	941	941

SIC: 3341 PROCESS DESCRIPTION: Brass Smelting

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 38 POTENTIAL LAKE IMPACT (tons/yr): 35

PARTICLE SIZE: 100% less than 1 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	10	10	9	9
WIND FREQUENCY (% impact on lake)	66	100	100	100
SEASONAL IMPACT (tons)	7	10	9	9

STATE OF: Ohio COUNTY: Cuyahoga

SIC: 2041 PROCESS DESCRIPTION: Flour Milling

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 176-2503 POTENTIAL LAKE IMPACT (tons/yr): 161-2291

PARTICLE SIZE: 100% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	44-626	44-626	44-626	44-626
WIND FREQUENCY (% impact on lake)	66	100	100	100
SEASONAL IMPACT (tons)	29-413	44-626	44-626	44-626

SIC: 3321 PROCESS DESCRIPTION: Sand Handling (Foundry)

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 207-1469 POTENTIAL LAKE IMPACT (tons/yr): 190-1343

PARTICLE SIZE: 50% less than 15 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	52-367	52-367	52-367	52-367
WIND FREQUENCY (% impact on lake)	66	100	100	100
SEASONAL IMPACT (tons)	34-242	52-367	52-367	52-367

STATE OF: Ohio COUNTY: Cuyahoga

SIC: 3295 PROCESS DESCRIPTION: Sand Processing

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 47-69 POTENTIAL LAKE IMPACT (tons/yr): 43-63

PARTICLE SIZE: 100% less than 100 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	12-18	12-18	11-16	12-17
WIND FREQUENCY (% impact on lake)	66	100	100	100
SEASONAL IMPACT (tons)	8-12	12-18	11-16	12-17

SIC: 2951 PROCESS DESCRIPTION: Asphalt Batching

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 50 POTENTIAL LAKE IMPACT (tons/yr): 50

PARTICLE SIZE: 60% less than 4 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	0	10	20	20
WIND FREQUENCY (% impact on lake)	66	100	100	100
SEASONAL IMPACT (tons)	0	10	20	20

STATE OF: Ohio COUNTY: Cuyahoga

SIC: 3323 PROCESS DESCRIPTION: Coke Oven

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 1253 POTENTIAL LAKE IMPACT (tons/yr): 1127

PARTICLE SIZE: 90% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	313	313	313	313
WIND FREQUENCY (% impact on lake)	66	100	100	100
SEASONAL IMPACT (tons)	188	313	313	313

SIC: 3341 PROCESS DESCRIPTION: Aluminum Chip Drying

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 8 POTENTIAL LAKE IMPACT (tons/yr): 7

PARTICLE SIZE: 100% less than 2 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	2	2	2	2
WIND FREQUENCY (% impact on lake)	66	100	100	100
SEASONAL IMPACT (tons)	1	2	2	2

STATE OF: Ohio COUNTY: Cuyahoga

SIC: 3321 PROCESS DESCRIPTION: Gray Iron Foundry

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 2189-14101 POTENTIAL LAKE IMPACT (tons/yr): 2002-12902

PARTICLE SIZE: 100% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	547-3525	547-3525	547-3525	547-3525
WIND FREQUENCY (% impact on lake)	66	100	100	100
SEASONAL IMPACT (tons)	361-2327	547-3525	547-3525	547-3525

STATE OF: Ohio COUNTY: Erie

SIC: 3274 PROCESS DESCRIPTION: Lime Stone Crushing and Calcining

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 5011 POTENTIAL LAKE IMPACT (tons/yr): 4809

PARTICLE SIZE: 95% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	593	1300	1677	1441
WIND FREQUENCY (% impact on lake)	66	100	100	100
SEASONAL IMPACT (tons)	391	1300	1677	1441

SIC: 3399 PROCESS DESCRIPTION: Coal Storage

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 13-30 POTENTIAL LAKE IMPACT (tons/yr): 11-29

PARTICLE SIZE: 50% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	3-8	3-8	3-8	3-8
WIND FREQUENCY (% impact on lake)	66	100	100	100
SEASONAL IMPACT (tons)	2-5	3-8	3-8	3-8

STATE OF: Ohio COUNTY: Lake

SIC: 4911 PROCESS DESCRIPTION: Coal Storage

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 1116-2509 POTENTIAL LAKE IMPACT (tons/yr): 929-2088

PARTICLE SIZE: 50% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	279-627	279-627	279-627	279-627
WIND FREQUENCY (% impact on lake)	33	100	100	100
SEASONAL IMPACT (tons)	92-207	279-627	279-627	279-627

SIC: 3274 PROCESS DESCRIPTION: Lime Calcining

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 577 POTENTIAL LAKE IMPACT (tons/yr): 480

PARTICLE SIZE: 95% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	144	144	144	144
WIND FREQUENCY (% impact on lake)	33	100	100	100
SEASONAL IMPACT (tons)	48	144	144	144

STATE OF: Ohio COUNTY: Lorain

SIC: 4911 PROCESS DESCRIPTION: Coal Storage

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 1729-3537 POTENTIAL LAKE IMPACT (tons/yr): 1439-2944

PARTICLE SIZE: 50% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	432-884	432-884	432-884	432-884
WIND FREQUENCY (% impact on lake)	33	100	100	100
SEASONAL IMPACT (tons)	143-292	432-884	432-884	432-884

SIC: 3312 PROCESS DESCRIPTION: Coke Oven

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 885 POTENTIAL LAKE IMPACT (tons/yr): 736

PARTICLE SIZE: 90% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	221	221	221	221
WIND FREQUENCY (% impact on lake)	33	100	100	100
SEASONAL IMPACT (tons)	73	221	221	221

STATE OF: Ohio COUNTY: Lorain

SIC: 3312 PROCESS DESCRIPTION: Iron Melting - Blast Furnace

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 1524 POTENTIAL LAKE IMPACT (tons/yr): 1419

PARTICLE SIZE: 50% less than 70 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	157	676	390	301
WIND FREQUENCY (% impact on lake)	33	100	100	100
SEASONAL IMPACT (tons)	57	676	390	301

SIC: 3312 PROCESS DESCRIPTION: Steel Melting - BOF

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 610 POTENTIAL LAKE IMPACT (tons/yr): 516

PARTICLE SIZE: 90% less than 5 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	140	171	159	140
WIND FREQUENCY (% impact on lake)	33	100	100	100
SEASONAL IMPACT (tons)	46	171	159	140

STATE OF: Ohio COUNTY: Lorain

SIC: 3312 PROCESS DESCRIPTION: Sintering

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 138-398 POTENTIAL LAKE IMPACT (tons/yr): 128-365

PARTICLE SIZE: 10% less than 5 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	17-48	37-107	46-131	39-111
WIND FREQUENCY (% impact on lake)	33	100	100	100
SEASONAL IMPACT (tons)	6-16	37-107	46-131	39-111

STATE OF: Ohio COUNTY: Lucas

SIC: 4911 PROCESS DESCRIPTION: Coal Storage

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 888-1814 POTENTIAL LAKE IMPACT (tons/yr): 813-1662

PARTICLE SIZE: 50% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	222-454	222-454	222-454	222-454
WIND FREQUENCY (% impact on lake)	100	66	100	100
SEASONAL IMPACT (tons)	222-454	147-300	222-454	222-454

SIC: 5153 PROCESS DESCRIPTION: Grain Handling

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 3075-41973 POTENTIAL LAKE IMPACT (tons/yr): 2821-38522

PARTICLE SIZE: 10% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	345-4715	743-10146	453-5183	1533-20928
WIND FREQUENCY (% impact on lake)	100	66	100	100
SEASONAL IMPACT (tons)	345-4715	490-6696	453-5183	1533-20928

STATE OF: Ohio COUNTY: Lucas

SIC: 3312 PROCESS DESCRIPTION: Coke Oven

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 890 POTENTIAL LAKE IMPACT (tons/yr): 813

PARTICLE SIZE: 90% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	222	222	222	222
WIND FREQUENCY (% impact on lake)	100	66	100	100
SEASONAL IMPACT (tons)	222	147	222	222

SIC: 3312 PROCESS DESCRIPTION: Iron Melting - Blast Furnace

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 135 POTENTIAL LAKE IMPACT (tons/yr): 124

PARTICLE SIZE: 50% less than 70 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	34	34	34	34
WIND FREQUENCY (% impact on lake)	100	66	100	100
SEASONAL IMPACT (tons)	34	22	34	34

STATE OF: Ohio COUNTY: Ottawa

SIC: 3275 PROCESS DESCRIPTION: Coal Storage

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 10-21 POTENTIAL LAKE IMPACT (tons/yr): 9-18

PARTICLE SIZE: 50% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	3-5	3-5	2-5	2-5
WIND FREQUENCY (% impact on lake)	100	66	100	100
SEASONAL IMPACT (tons)	3-5	2-3	2-5	2-5

SIC: 1422 PROCESS DESCRIPTION: Limestone Crushing

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 196 POTENTIAL LAKE IMPACT (tons/yr): 179

PARTICLE SIZE: 95% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	49	49	49	49
WIND FREQUENCY (% impact on lake)	100	66	100	100
SEASONAL IMPACT (tons)	49	32	49	49

STATE OF: Ohio COUNTY: Ottawa

SIC: 3275 PROCESS DESCRIPTION: Gypsum Grinding

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 315 POTENTIAL LAKE IMPACT (tons/yr): 292

PARTICLE SIZE: 95% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	63	69	88	95
WIND FREQUENCY (% impact on lake)	100	60	100	100
SEASONAL IMPACT (tons)	63	46	88	95

APPENDIX L

LAKE IMPACT FROM THE STATE OF WISCONSIN

STATE OF: Wisconsin COUNTY: Douglas

SIC: 1099 PROCESS DESCRIPTION: Ore Storage

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 10672-53169 POTENTIAL LAKE IMPACT (tons/yr): 0

PARTICLE SIZE: 100% less than 100 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	2313-11523	1668-8310	2846-14179	2846-14179
WIND FREQUENCY (% impact on lake)	0	0	0	0
SEASONAL IMPACT (tons)	0	0	0	0

STATE OF: Wisconsin COUNTY: Douglas

SIC: 3241 PROCESS DESCRIPTION: Cement Grinding, Loading

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 828-865 POTENTIAL LAKE IMPACT (tons/yr): 0

PARTICLE SIZE: 58% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	83-87	248-260	248-260	248-260
WIND FREQUENCY (% impact on lake)	0	0	0	0
SEASONAL IMPACT (tons)	0	0	0	0

SIC: 2951 PROCESS DESCRIPTION: Asphalt Plant

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 20 POTENTIAL LAKE IMPACT (tons/yr): 0

PARTICLE SIZE: 60% less than 4 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	4	6	6	5
WIND FREQUENCY (% impact on lake)	0	0	0	0
SEASONAL IMPACT (tons)	0	0	0	0

STATE OF: Wisconsin COUNTY: Douglas

SIC: 2083 PROCESS DESCRIPTION: Grain Handling

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 4412-80153 POTENTIAL LAKE IMPACT (tons/yr): 0

PARTICLE SIZE: 10% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	506-9287	1287-23451	1492-26938	1127-20475
WIND FREQUENCY (% impact on lake)	0	0	0	0
SEASONAL IMPACT (tons)	0	0	0	0

SIC: 3274 PROCESS DESCRIPTION: Limestone Manufacturing, Loading

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 676 POTENTIAL LAKE IMPACT (tons/yr): 0

PARTICLE SIZE: 905 less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	176	176	176	149
WIND FREQUENCY (% impact on lake)	0	0	0	0
SEASONAL IMPACT (tons)	0	0	0	0

STATE OF: Wisconsin COUNTY: Door

SIC: 2951 PROCESS DESCRIPTION: Asphalt Batching

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 31 POTENTIAL LAKE IMPACT (tons/yr): 31

PARTICLE SIZE: 60% less than 4 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	0	9	12	9
WIND FREQUENCY (% impact on lake)	100	100	100	100
SEASONAL IMPACT (tons)	0	9	12	9

STATE OF: Wisconsin COUNTY: Kenosha

SIC: 3351 PROCESS DESCRIPTION: Brass Melting

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 1-2 POTENTIAL LAKE IMPACT (tons/yr): 1

PARTICLE SIZE: 100% less than 1 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	0	0.4-0.8	0.4-0.8	0.2-0.4
WIND FREQUENCY (% impact on lake)	100	0	100	0
SEASONAL IMPACT (tons)	0	0	0.4-0.8	0.2-0.4

SIC: 2951 PROCESS DESCRIPTION: Asphalt Batching

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 7 POTENTIAL LAKE IMPACT (tons/yr): 5

PARTICLE SIZE: 60% less than 4 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	0	1	4	1
WIND FREQUENCY (% impact on lake)	100	0	100	100
SEASONAL IMPACT (tons)	0	0	4	1

STATE OF: Wisconsin COUNTY: Kewannes

SIC: 2951 PROCESS DESCRIPTION: Asphalt Batching

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 20 POTENTIAL LAKE IMPACT (tons/yr): 17

PARTICLE SIZE: 60% less than 4 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	0	4	12	4
WIND FREQUENCY (% impact on lake)	66	33	100	100
SEASONAL IMPACT (tons)	0	1	12	4

SIC: 2436 PROCESS DESCRIPTION: Wood Working

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 2 POTENTIAL LAKE IMPACT (tons/yr): 2

PARTICLE SIZE: 50% less than 30 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	0	0.4	1.2	0.4
WIND FREQUENCY (% impact on lake)	66	33	100	100
SEASONAL IMPACT (tons)	0	0.1	1.2	0.4

STATE OF: Wisconsin COUNTY: Manitowoc

SIC: 3241 PROCESS DESCRIPTION: Cement Rotary Kiln

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 255-434 POTENTIAL LAKE IMPACT (tons/yr): 234-399

PARTICLE SIZE: 58% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	0	31-52	112-191	112-191
WIND FREQUENCY (% impact on lake)	65	33	100	100
SEASONAL IMPACT (tons)	0	10-17	112-191	112-191

SIC: 2951 PROCESS DESCRIPTION: Asphalt Batching

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 80 POTENTIAL LAKE IMPACT (tons/yr): 69

PARTICLE SIZE: 60% less than 4 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	0	16	37	27
WIND FREQUENCY (% impact on lake)	66	33	100	100
SEASONAL IMPACT (tons)	0	5	37	27

STATE OF: Wisconsin COUNTY: Manitowoc

SIC: 4931 PROCESS DESCRIPTION: Coal Storage

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 49-97 POTENTIAL LAKE IMPACT (tons/yr): 36-72

PARTICLE SIZE: 50% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	12-24	12-24	12-24	12-24
WIND FREQUENCY (% impact on lake)	66	33	100	100
SEASONAL IMPACT (tons)	8-16	4-8	12-24	12-24

SIC: 3274 PROCESS DESCRIPTION: Lime Kiln

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 76-96 POTENTIAL LAKE IMPACT (tons/yr): 57-72

PARTICLE SIZE: 95% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	19-24	19-24	19-24	19-24
WIND FREQUENCY (% impact on lake)	66	33	100	100
SEASONAL IMPACT (tons)	13-16	6-8	19-24	19-24

STATE OF: Wisconsin COUNTY: Manitowoc

SIC: 3361 PROCESS DESCRIPTION: Aluminum Reverberatory Furnace

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 2

POTENTIAL LAKE IMPACT (tons/yr): 2

PARTICLE SIZE: 100% less than 2 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	0.5	0.5	0.5	0.5
WIND FREQUENCY (% impact on lake)	66	33	100	100
SEASONAL IMPACT (tons)	0.3	0.2	0.5	0.5

STATE OF: Wisconsin COUNTY: Marinette

SIC: 2496 PROCESS DESCRIPTION: Coal Storage

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 2-3 POTENTIAL LAKE IMPACT (tons/yr): 1-2

PARTICLE SIZE: 50% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	0.5-0.8	0.6-0.8	0.5-0.7	0.4
WIND FREQUENCY (% impact on lake)	66	33	100	100
SEASONAL IMPACT (tons)	0.3	0.2-0.3	0.5-0.7	0.4

SIC: 2951 PROCESS DESCRIPTION: Asphalt Batching

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 6 POTENTIAL LAKE IMPACT (tons/yr): 5

PARTICLE SIZE: 60% less than 4 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	0	2	2	2
WIND FREQUENCY (% impact on lake)	66	33	100	100
SEASONAL IMPACT (tons)	0	1	2	2

STATE OF: Wisconsin COUNTY: Marinette

SIC: 2496 PROCESS DESCRIPTION: Coarse Material Handling

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 27 POTENTIAL LAKE IMPACT (tons/yr): 19

PARTICLE SIZE: 100% less than 100 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	8	9	5	5
WIND FREQUENCY (% impact on lake)	33	66	100	100
SEASONAL IMPACT (tons)	3	6	5	5

STATE OF: Wisconsin COUNTY: Milwaukee

SIC: 2082 PROCESS DESCRIPTION: Grain Handling

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 779-6913 POTENTIAL LAKE IMPACT (tons/yr): 576-4143

PARTICLE SIZE: 10% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	188-706	210-1888	211-1900	177-1537
WIND FREQUENCY (% impact on lake)	100	0	100	100
SEASONAL IMPACT (tons)	188-706	0	211-1900	177-1537

SIC: 4911 PROCESS DESCRIPTION: Coal Storage

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 1556-3097 POTENTIAL LAKE IMPACT (tons/yr): 1171-2330

PARTICLE SIZE: 50% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	387-769	385-766	398-793	386-768
WIND FREQUENCY (% impact on lake)	100	0	100	100
SEASONAL IMPACT (tons)	387-769	0	398-793	386-768

STATE OF: Wisconsin COUNTY: Milwaukee

SIC: 3714 PROCESS DESCRIPTION: Zinc Melting

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 8 POTENTIAL LAKE IMPACT (tons/yr): 6

PARTICLE SIZE: 100% less than 2 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	2	2	2	2
WIND FREQUENCY (% impact on lake)	100	0	100	100
SEASONAL IMPACT (tons)	2	0	2	2

SIC: 2951 PROCESS DESCRIPTION: Asphalt Batching

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 107 POTENTIAL LAKE IMPACT (tons/yr): 82

PARTICLE SIZE: 60% less than 4 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	2	26	50	30
WIND FREQUENCY (% impact on lake)	100	0	100	100
SEASONAL IMPACT (tons)	2	0	50	30

STATE OF: Wisconsin COUNTY: Milwaukee

SIC: 3519 PROCESS DESCRIPTION: Aluminum Melting

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 15 POTENTIAL LAKE IMPACT (tons/yr): 12

PARTICLE SIZE: 100% less than 2 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	4	3	3	5
WIND FREQUENCY (% impact on lake)	100	0	100	100
SEASONAL IMPACT (tons)	4	0	3	5

SIC: 3321 PROCESS DESCRIPTION: Iron Melting - Copula

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 170-2535 POTENTIAL LAKE IMPACT (tons/yr): 128-1941

PARTICLE SIZE: 100% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	46-710	43-592	33-540	47-691
WIND FREQUENCY (% impact on lake)	100	0	100	100
SEASONAL IMPACT (tons)	46-710	0	33-540	47-691

STATE OF: Wisconsin COUNTY: Milwaukee

SIC: 3321 PROCESS DESCRIPTION: Iron Melting - EAF

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 133-414 POTENTIAL LAKE IMPACT (tons/yr): 99-310

PARTICLE SIZE: 100% less than 1 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	34-104	34-104	32-102	33-104
WIND FREQUENCY (% impact on lake)	100	0	100	100
SEASONAL IMPACT (tons)	34-104	0	32-102	33-104

SIC: 3325 PROCESS DESCRIPTION: Steel Melting - EAF

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 409-1146 POTENTIAL LAKE IMPACT (tons/yr): 303-852

PARTICLE SIZE: 100% less than 1 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	98-279	107-294	98-279	107-294
WIND FREQUENCY (% impact on lake)	100	0	100	100
SEASONAL IMPACT (tons)	98-279	0	98-279	107-294

STATE OF: Wisconsin COUNTY: Milwaukee

SIC: 3320 PROCESS DESCRIPTION: Sand Preparation

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 592-3020 POTENTIAL LAKE IMPACT (tons/yr): 446-2263

PARTICLE SIZE: 50% less than 15 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	113-775	146-758	133-669	160-819
WIND FREQUENCY (% impact on lake)	100	0	100	0
SEASONAL IMPACT (tons)	113-775	0	133-669	160-819

SIC: 3362 PROCESS DESCRIPTION: Bronze Melting

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 39-175 POTENTIAL LAKE IMPACT (tons/yr): 28-128

PARTICLE SIZE: 100% less than 1 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	11-49	11-47	8-35	9-44
WIND FREQUENCY (% impact on lake)	100	0	100	100
SEASONAL IMPACT (tons)	11-49	0	8-35	9-44

STATE OF: Wisconsin COUNTY: Milwaukee

SIC: 3241 PROCESS DESCRIPTION: Cement Manufacturing

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 16 POTENTIAL LAKE IMPACT (tons/yr): 11

PARTICLE SIZE: 58% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	2	5	6	3
WIND FREQUENCY (% impact on lake)	100	0	100	100
SEASONAL IMPACT (tons)	2	0	6	3

SIC: 3312 PROCESS DESCRIPTION: Coke Oven

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 520-2040 POTENTIAL LAKE IMPACT (tons/yr): 391-1530

PARTICLE SIZE: 90% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	146-571	130-510	120-469	125-490
WIND FREQUENCY (% impact on lake)	100	0	100	100
SEASONAL IMPACT (tons)	146-571	0	120-469	125-490

STATE OF: Wisconsin COUNTY: Milwaukee

SIC: 3341 PROCESS DESCRIPTION: Lead Smelting

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 15-85 POTENTIAL LAKE IMPACT (tons/yr): 12-63

PARTICLE SIZE: 100% less than 16 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	4-21	4-21	4-21	4-21
WIND FREQUENCY (% impact on lake)	100	0	100	100
SEASONAL IMPACT (tons)	4-21	0	4-21	4-21

SIC: 3714 PROCESS DESCRIPTION: Core Oven

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 649-6061 POTENTIAL LAKE IMPACT (tons/yr): 507-4727

PARTICLE SIZE: 50% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	182-1697	143-1333	143-1333	182-1697
WIND FREQUENCY (% impact on lake)	100	0	100	100
SEASONAL IMPACT (tons)	182-1697	0	143-1333	182-1697

STATE OF: Wisconsin COUNTY: Ozaukee

SIC: 4911 PROCESS DESCRIPTION: Coal Storage

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 328-653 POTENTIAL LAKE IMPACT (tons/yr): 246-489

PARTICLE SIZE: 50% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	82-163	82-163	82-163	82-163
WIND FREQUENCY (% impact on lake)	100	0	100	100
SEASONAL IMPACT (tons)	82-163	0	82-163	82-163

SIC: 2951 PROCESS DESCRIPTION: Asphalt Batching

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 10 POTENTIAL LAKE IMPACT (tons/yr): 7

PARTICLE SIZE: 60% less than 4 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	0	3	4	3
WIND FREQUENCY (% impact on lake)	100	0	100	100
SEASONAL IMPACT (tons)	0	0	4	3

STATE OF: Wisconsin COUNTY: Racine

SIC: 2951 PROCESS DESCRIPTION: Asphalt Batching

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 37 POTENTIAL LAKE IMPACT (tons/yr): 28

PARTICLE SIZE: 60% less than 4 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	8	9	11	9
WIND FREQUENCY (% impact on lake)	100	0	100	100
SEASONAL IMPACT (tons)	8	0	11	9

SIC: 1422 PROCESS DESCRIPTION: Limestone Crushing

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 800 POTENTIAL LAKE IMPACT (tons/yr): 624

PARTICLE SIZE: 95% less than 20 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	200	176	208	216
WIND FREQUENCY (% impact on lake)	100	0	100	100
SEASONAL IMPACT (tons)	200	0	208	216

STATE OF: Wisconsin COUNTY: Racine

SIC: 3325 PROCESS DESCRIPTION: Steel Melting - EAF

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 138-749 POTENTIAL LAKE IMPACT (tons/yr): 108-584

PARTICLE SIZE: 100% less than 1 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	35-187	30-165	36-195	37-202
WIND FREQUENCY (% impact on lake)	100	0	100	100
SEASONAL IMPACT (tons)	35-187	0	36-195	37-202

SIC: 3325 PROCESS DESCRIPTION: Core Oven

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 4-37 POTENTIAL LAKE IMPACT (tons/yr): 3-29

PARTICLE SIZE: 90% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	1-9	1-8	1-10	1-10
WIND FREQUENCY (% impact on lake)	100	0	100	100
SEASONAL IMPACT (tons)	1-9	0	1-10	1-10

STATE OF: Wisconsin COUNTY: Racine

SIC: 3325 PROCESS DESCRIPTION: Sand Preparation

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 671 POTENTIAL LAKE IMPACT (tons/yr): 521

PARTICLE SIZE 50% less than 15 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	168	148	174	179
WIND FREQUENCY (% impact on lake)	100	0	100	100
SEASONAL IMPACT (tons)	168	0	174	179

STATE OF: Wisconsin COUNTY: Sheboygan

SIC: 9911 PROCESS DESCRIPTION: Coal Storage

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 94-188 POTENTIAL LAKE IMPACT (tons/yr): 72-141

PARTICLE SIZE: 50% less than 10 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	24-47	24-47	24-47	24-47
WIND FREQUENCY (% impact on lake)	100	0	100	100
SEASONAL IMPACT (tons)	24-47	0	24-47	24-47

SIC: 3431 PROCESS DESCRIPTION: Iron Melting - EAF

POTENTIAL FUGITIVE EMISSIONS (tons/yr): 297-1345 POTENTIAL LAKE IMPACT (tons/yr): 222-1008

PARTICLE SIZE: 100% less than 1 u

	DEC/FEB	MAR/MAY	JUNE/AUG	SEPT/NOV
SEASONAL FUGITIVE EMISSIONS	74-336	74-336	74-336	74-336
WIND FREQUENCY (% impact on lake)	100	0	100	100
SEASONAL IMPACT (tons)	74-336	0	74-336	74-336

APPENDIX M

STATE OF ILLINOIS SOURCE LIST

STATE: ILLINOIS

I.D. NUMBER	NAME OF FACILITY	CITY
COOK COUNTY		
031600AAO	Edward Hines Lumber Co. - Main Yard	Chicago
031600ABS	Sandberg Mfg. Co.	Chicago
031600ABZ	Vilas Mages Co.	Chicago
031600AGL	H. Kramer & Co.	Chicago
031600AIN	Commonwealth Edison - Crawford Station	Chicago
031600AMI	Commonwealth Edison - Fisk Station	Chicago
031600AMY	Central Soya Inc.	Chicago
031600AMZ	Celotex Corp.	Chicago
031600AOX	R. Lavin & Sons, Inc.	Chicago
031600ARH	SIPI Metals Corp.	Chicago
031600ATP	A. Finkel & Sons Co.	Chicago
031600AVZ	Northwestern Malt & Grain Co.	Chicago
031600AWO	Dixie Portland Flour Mills	Chicago
031600BBM	Connelly - GPM, Inc.	Chicago
031600BJO	Monarch Asphalt	Chicago
031600BNS	General Foods Corp.	Chicago
031600BNW	American Cyanamid Co.	Chicago
031600BOJ	Pettibone Corp.	Chicago
031600BPP	Material Service Corp. - Yard #9	Chicago
031600BQF	Material Service Corp. - Yard #3	Chicago
031600BRV	Barrett Paving Materials	Chicago
031600CJH	Penn-Dixie Industries, Inc.	Chicago
031600CRQ	American Steel Container Co.	Chicago

STATE: ILLINOIS

I.D. NUMBER	NAME OF FACILITY	CITY
COOK COUNTY (con't)		
031600DXA	Ideal Box Co.	Chicago
031600EDK	SIPI Metals Weed St. Plant	Chicago
031600EMV	Playskool, Inc.	Chicago
031600AAW	General Motors Electro-Motive Division - Plant 2	Chicago
031600AEC	Milles Equipment & Supply	Chicago
031600AOL	Imperial Smelting Corp.	Chicago
031600AQW	Stauffer Chemical - Industrial Chemical Division	Chicago
031600ARY	American Asphalt Paving Co.	Chicago
031600ASE	American Brick Co.	Chicago
031600ATR	Fleischmann Malting Co., Inc.	Chicago
031600CBQ	World's Finest Chocolate, Inc.	Chicago
031600EBN	Gordon Shopiro	Chicago
031600ADY	Marblehead Lime Co.	Chicago
031600AED	Mississippi Lime Co.	Chicago
031600AHI	Rail-to-Water Corp.	Chicago
031600AIE	Indiana Grain Co-Op	Chicago
031600ALZ	U.S. Steel - South Works	Chicago
031600AMA	Interlake - Chicago Blast Furnace Plant	Chicago
031600AMB	Wisconsin Steel Works	Chicago
031600AMC	Republic Steel Corp.	Chicago
031600AMD	Continental Grain Co. - Elevator B	Chicago
031600ANE	Cargill, Inc. - Commodity Marketing Div.	Chicago

STATE: ILLINOIS

I.D. NUMBER	NAME OF FACILITY	CITY
COOK COUNTY (con't)		
031600AQE	Continental Grain Co. - Elevator C	Chicago
031600AUB	Interstate Smelting & Refining Co.	Chicago
031600AWJ	Falstaff Brewing Co.	Chicago
031600BEU	Pillsbury Co.	Chicago
031600BFB	Interlake, Inc. - Chicago Coke Plant	Chicago
031600BFD	Valley Mold & Iron	Chicago
031600CGT	Chicago Paving & Construction	Chicago
031600DVV	Cametco, Inc.	Chicago
031600EEV	Heckett Engineering Co.	Chicago
031600EKT	Aglomet Chicago, Inc.	Chicago
031288AAB	Monarch Asphalt Co.	Skokie
031288AAD	Wells Manufacturing Co.	Skokie
031288ABN	Barrett Paving Material	Skokie
LAKE COUNTY		
091725AAA	Abbott Laboratories - Group Operations Div.	North Chicago
091725AAG	North Chicago Refiners & Smelters, Inc.	North Chicago
097140AAA	Skokie Valley Asphalt Co. Inc.	Park City
097190AAC	Commonwealth Edison - Waukegan Station	Waukegan
097190AAJ	Johns Manville Products Corp.	Waukegan
097190AAP	National Gypsum Co.	Waukegan
097190ADB	National Gypsum Co.	Waukegan
097809AAB	Peter Baker & Son Co.	Lake Bluff
097811AAB	Meyer Material Co. - North Chicago Plant #21	Lake Bluff

APPENDIX N

STATE OF INDIANA SOURCE LIST

STATE: INDIANA

I.D. NUMBER	NAME OF FACILITY	CITY
LAKE COUNTY (2360-)		
0002	American Maize Products Co.	Hammond
0007	Associated Box Corporation	East Chicago
0009	Blaw Knox Foundry & Mill Machinery	East Chicago
0012	Globe Industries	Whiting
0013	Hammond Lead Products	Hammond
0014	Harbison-Walker Refractories Co.	Hammond
0015	Inland Steel, Indiana Harbor Works, Part A	East Chicago
0016	Inland Steel, Indiana Harbor Works, Part B	East Chicago
0024	Kaiser Aluminum & Chemical	Gary
0025	N & A Foundry Corp.	Griffith
0032	Northern Indiana Public Service Co. - Mitchell	Gary
0035	Commonwealth Edison Stateline Generator	Hammond
0037	United States Gypsum Co.	East Chicago
0038	U.S. Steel - Gary Works, Part 1	Gary
0039	U.S. Steel - Gary Works, Part 2	Gary
0041	U.S. Steel Lead Refinery, Inc.	East Chicago
0042	Universal Atlas Cement, Buffington Station	Gary
0044	Youngstown Sheet & Tube	East Chicago
0065	American Smelting & Refining	Hammond
0070	Marblehead Lime Co.	Gary
0073	Atlas Blacktop Co., Inc.	Hammond
0074	A. Metz, Inc.	----

STATE: INDIANA

I.D. NUMBER	NAME OF FACILITY	CITY
LAKE COUNTY (con't)(2360-)		
0077	Western Cold Drawn Steel Co.	Gary
0084	U.S. Reduction Co.	East Chicago
0093	Bieker Co.	Hammond
0098	Glidden-Durkee Division SCM Corporation	Hammond
0100	Halstab Division, Hammond Lead Products, Inc.	Hammond
0140	Bucko Construction Co., Inc.	Gary
0142	Northern Indiana Dock Co.	East Chicago
0143	Wallace Metals, Inc.	East Chicago
0144	National Briquette Corp.	East Chicago
0147	Bihlman Asphalt Co.	East Chicago
0150	Certified Concrete, Inc.	East Chicago
0162	A. Metz, Inc.	Gary
0163	General Refractories Co.	Gary
0165	H.B. Reed and Co., Inc.	Gary
0166	Republic Steel Corp. - Union Drawn Div.	Gary
PORTER COUNTY (3420-)		
0001	Bethlehem Steel Corp.	Burns Harbor
0002	Bailly Generating Station	Chesterton
0007	Porter County Farm Bureau	Wheeler
0016	Walsh & Kelly	---

APPENDIX O

STATE OF MICHIGAN SOURCE LIST

STATE: MICHIGAN

I.D. NUMBER	NAME OF FACILITY	CITY
ALGER COUNTY		
B1470	Kimberly Clark Munising Mill	Munising
ARENAC COUNTY		
B4970	Van Deusen Stone Company	Au Gres
M1856	Bay County Road Commission	Omer
BAY COUNTY		
A0224	Aetna Portland Cement	Essexville
A0227	Northern Concrete Pipe Inc.	Bay City
A0233	Bay City Foundry	Bay City
B1485	Bay Asphalt Paving Company	Essexville
B1487	American Hoist & Derrick Co. Bay City Division	Bay City
B1491	Wickes Agriculture	Bay City
B1493	Monitor Sugar Company	Bay City
B2460	Chevrolet Motor Division	Bay City
B2840	Consumers Power Company D.E. Karn #1 & 2	Essexville
B2844	Consumers Power Company J.C. Weadock Plant	Essexville
BERRIEN COUNTY		
A0367	Manley Bros. of Indiana Inc.	Bridgman
B1511	Auto Specialties Mfg. Co. Riverside Plant	Benton Harbor
B1512	Auto Specialties Mfg. Co. St. Joseph Plant	St. Joseph
B2404	Bendix Corp.	St. Joseph
B5838	Consumers Asphalt & Concrete Co.	Benton Harbor

STATE: MICHIGAN

I.D. NUMBER	NAME OF FACILITY	CITY
BERRIEN COUNTY (con't)		
B6223	John G. Yerington Co. Benton Harbor Plant	Benton Harbor
B6578	Bridgman Casting Center	Bridgman
CHIPPEWA COUNTY		
B1566	Soo Gravel & Asphalt Co.	Sault Sainte Marie
B2362	Drummond Dolomite Inc.	Drummond Island
DELTA COUNTY		
B1570	Chicago & Northwestern Trans.	Escanaba
B1573	Upper Peninsula Power Co.	Escanaba
B5239	Payne & Dolan Inc. (Permit 44-75 Portable)	Escanaba
B5240	Payne & Dolan Inc. (Permit 95-75 Delta County)	Escanaba
HURON COUNTY		
B2815	Detroit Edison Co. - Harbor Beach Power Plant	Harbor Beach
B2873	Michigan Sugar Company	Sebewaing
B4944	Wallace Stone Company	Bay Port
MACKINAC COUNTY		
B4924	Limestone Operations	Cedarville
MACOMB COUNTY		
A3179	Ready Mix Concrete Inc.	Warren
A3352	Ward & Vannuck Asphalt Co.	Mt. Clemens
B1783	New Haven Foundry	New Haven

STATE: MICHIGAN

I.D. NUMBER	NAME OF FACILITY	CITY
MACOMB COUNTY (con't)		
B4124	Ace Concrete Products Co.	Roseville
B5635	Wolverine Bronze Co.	Roseville
B5852	E.B. Metzen Co.	New Baltimore
B6264	Ace Concrete Products Co.	Mt. Clemens
B6277	Four Seasons Transit Mix Cement Construction Co.	Roseville
B6280	Van Horn Bros. - Mt. Clemens Plant	Mt. Clemens
B6287	Mini-Mix Co.	Fraser
MARQUETTE COUNTY		
B1833	Marquette BD of Light & Power	Marquette
B4261	Upper Peninsula Generating Co. Presque Isle Station	Marquette
MASON COUNTY		
A3933	Harbison-Walker Refractories Division of Dresser Industries	Ludington
A3934	Great Lakes Casting Corp.	Ludington
B1846	Dow Chemical Ludington Plant	Ludington
B1851	Laman Asphalt & Redi-Mix, Inc.	Ludington
B4114	Chesapeake and Ohio Railway Co.	Ludington
MENOMINEE COUNTY		
B1855	Menomine Paper Company, Inc.	Menominee
MONROE COUNTY		
A4097	Builders Ready-Mix Concrete	Monroe
A4127	Ford Motor Co. - Monroe	Monroe
B2816	Monroe Power Plant	Monroe

STATE: MICHIGAN

I.D. NUMBER	NAME OF FACILITY	CITY
MONROE COUNTY (con't)		
B2846	Consumers Power Company J.R. Whiting Plant	Luna Pier
MUSKEGON COUNTY		
A4203	S.D. Warren Co.	Muskegon
A4231	Certified Concrete Inc.	Muskegon Heights
A4238	Muskegon Aluminum Foundry Co.	Muskegon
A4242	Enterprise Brass Works	Muskegon
A4302	Sealed Power Corp.	Muskegon Heights
A4315	Cannon-Muskegon Corp.	Muskegon
B1893	Muskegon Asphalt Paving Co.	Muskegon
B1906	CWC Castings - Plant 1 (Sanford Street)	Muskegon Heights
B1907	CWC Castings - Plant 3 (2673 Henry St.)	Roosevelt Park
B1908	CWC Casting Division - Plant 4 (Broadway St.)	Muskegon Heights
B1925	Tech-Cast Inc.	Montague
B1929	Westran Corp.	Muskegon
B2836	Consumers Power Co. - B.C. Cobb Plant	Muskegon
ONTONAGON COUNTY		
A5754	Champion Packaging - Ontonagon Mill Division	Ontonagon
B1966	White Pine Copper Division	White Pine
OTTAWA COUNTY		
A5872	Holtrop Concrete Products	Ferrysburg
A5879	Grand Haven Brass Foundry	Grand Huron

STATE: MICHIGAN

I.D. NUMBER	NAME OF FACILITY	CITY
OTTAWA COUNTY (con't)		
B2835	Consumer Power Plant J.H. Campbell Plant	West Olive
PRESOUE ISLE COUNTY		
B4925	Limestone Operations - Calcite Plant	Rogers City
SCHOOLCRAFT COUNTY		
B4931	Inland Lime and Stone Co.	Gulliver
WAYNE COUNTY		
A6928	Stroh Brewery Co.	Detroit
A7809	Great Lakes Steel Division	Ecorse
A7816	Kahl Iron Foundry Inc.	Detroit
A7835	Industrial Smelting Co.	Detroit
A8631	GM - Cadillac Motor Car Division	Detroit
A8640	Ford Motor Company Steel Division	Dearborn
A8646	Ford Dearborn Specialty Foundry	Dearborn
A9036	Rickel Malting Company Inc.	Detroit
A9740	Allied Chemical Corp.	Detroit
B0673	Anaconda American Brass	Detroit
B2081	Revere Copper & Brass Michigan Division Plant	Detroit
B2116	McLouth Steel Corp.	Trenton
B2166	Chrysler Huber Ave. Foundry	Detroit
B2169	Marblehead Lime Co.	River Rouge
B2800	BASF Wyandotte Corp.	Wyandotte
B2810	Detroit Edison River Rouge Power Plant	River Rouge
B2811	Detroit Edison Trenton Chan Power Plant	Trenton

STATE: MICHIGAN

I.D. NUMBER	NAME OF FACILITY	CITY
WAYNE COUNTY (concluded)		
B2812	Detroit Edison Conners Creek Power Plant	Detroit
B3009	Detroit Edison Pennsalt Power Plant	Wyandotte
B3011	Detroit Edison Willis Heating Plant	Detroit
B3195	Asphalt Products Plant 6-A	Detroit
B3518	United States Gypsum Co.	River Rouge
B3520	Detroit Lime Co.	Detroit
B3567	Peerless Cement Co.	Detroit
B4009	Base Wyandotte Corp. - South Works	Wyandotte
B4237	Asphalt Products Corp. - Plant 1A	Detroit
B4243	Levy Slag Plant - No. 6	Detroit
B6087	Darco Corp.	River Rouge

APPENDIX P

STATE OF MINNESOTA SOURCE LIST

STATE: MINNESOTA

I.D. NUMBER	NAME OF FACILITY	CITY
ST. LOUIS COUNTY (3260-)		
0001	J.C. Campbell Co.	Two Harbors
0013	Minnesota Power & Light Co. Aurora Station	Duluth
0021	Cargill, Inc. - Elevator B	Duluth
0022	Duluth Steam Coop. Association Duluth Site	Duluth
0023	International Multi-foods	Duluth
0032	Reserve Mining Co. - Babbitt Site	Silver Bay
0035	U.S. Steel Corp. - Morgan Park Site	Morgan Park
0036	Arrowhead Blacktop Co. - Jeffery Road Munger Site	Duluth
0037	Arrowhead Blacktop Co. - Plant #3	Duluth
0055	Cargill, Inc. - Elevator C	Duluth
0058	Lake Shore Blacktop Co. - Two Harbors Site	Two Harbors
0059	U.S. Steel Corp. - Lake Shipping	Duluth
LAKE COUNTY (1840-)		
0003	Reserve Mining Co. - Silver Bay Site	Silver Bay

APPENDIX Q
STATE OF OHIO SOURCE LIST

STATE: OHIO

I.D. NUMBER	NAME OF FACILITY	CITY
ASHTABULA COUNTY		
0204000211	Cleveland Electric & Illuminating Co.	Ashtabula
0204010003	Union Carbide Corp. - Metals Division	Ashtabula
0204010193	G & W Natural Resources Group Titanium	Ashtabula
CUYAHOGA COUNTY		
1318000078	Jones & Laughlin Steel Corp.	Cleveland
1318000103	River Smelting & Refining	Cleveland
1318000229	Cereal Food Processors	Cleveland
1318000244	Cleveland Electric Illuminating Steam Heating Plant	Cleveland
1318000245	Cleveland Electric Illuminating Lake Shore Plant	Cleveland
1318000372	Forest City Foundries	Cleveland
1318000958	Shell Sands, Inc.	Cleveland
1318001007	Harshaw Chemical Co.	Cleveland
1318001169	NASA Lewis Research Center	Cleveland
1318001287	Wabash Alloys, Inc. - A&C Division	Cleveland
1318001613	Republic Steel Corp.	Cleveland
1318001622	U.S. Steel Corp. - Lorain Cuyahoga Works	Cleveland
1318001721	National Metal Abrasive Co.	Cleveland
1318002490	Division Pumping Station	Cleveland
1318002662	Standard Slag Co., Republic Plant	Cleveland
1318002816	Union-Independent Division of UNSCO	Cleveland
1318003287	Sand Products Corporation	Cleveland

STATE: OHIO

I.D. NUMBER	NAME OF FACILITY	CITY
CUYAHOGA COUNTY (con't)		
1318003295	Smith Facing & Supply Co.	Cleveland
1318003729	Horvitz Co.	Cleveland
1318004160	Hupp, Inc.	Cleveland
1318005539	Valley Mould & Iron Co.	Cleveland
1318120178	Ford Motor Co. - Cleveland Engine Plant 2	Brookpark
1318120179	Ford Motor Co. - Cleveland Engine Plant 1	Brookpark
1318120180	Ford Motor Co. - Cleveland Casting Plant	Brookpark
1318201633	Addressograph Multigraph	Euclid
1318201688	Chase Brass & Copper Co., Inc.	Euclid
1318202137	Lincoln Electric Co.	Cleveland
ERIE COUNTY		
0322010062	Huron Lime Co.	Huron
0322020045	New Departure - Hyatt	Sandusky
0322020183	Sandusky Crushed Stone Co.	Sandusky
LAKE COUNTY		
0243000165	IRC Fibers Co.	Painesville
0243020456	Erie Coke & Chemical Co.	Fairport Harbor
0243030257	Republic Steel Corp. - Lime Plant	Grand River
0243160009	Cleveland Electric Illuminating Co. East Lake Plant	Willoughby
0243160174	Ohio Rubber Co.	Willoughby
LORAIN COUNTY		
1947030013	Cleveland Electric Illuminating Co. Avon Lake Plant	Avon Lake

STATE: OHIO

I.D. NUMBER	NAME OF FACILITY	CITY
LORAIN COUNTY (con't)		
1947080049	Ohio Edison - Edgewater	Lorain
1947080229	U.S. Steel Corp. - Lorain Cuyahoga Works	Lorain
LUCAS COUNTY		
0448010064	General Mills Inc.	Toledo
0448010086	Toledo Edison Co. - Acme Station	Toledo
0448010203	Cargill Inc.	Toledo
0448010247	Toledo Mental Health Center	Toledo
0448010313	Mid-States Terminal, Inc.	Toledo
0448010495	Andersons Grain Division - Toledo Plant	Toledo
0448010699	R.G.C.	Toledo
0448020006	Toledo Eidson Co. - Bay Shore Station	Oregon
OTTAWA COUNTY		
0362000078	U.S. Gypsum Co.	Gypsum
0362000088	Maumee Stone Co. - Rocky Ridge Plant	Benton Township
0362010011	Celotex Corp.	Port Clinton

APPENDIX R

STATE OF WISCONSIN SOURCE LIST

STATE: WISCONSIN

I.D. NUMBER	NAME OF FACILITY	CITY
DOOR COUNTY		
150001	Door County Highway Dept.	Sturgeon Bay
150007	Bissen Blacktop Inc.	Sturgeon Bay
DOUGLAS COUNTY		
160001	Adm Grain Co.	Superior
160002	Continental Elevator	Superior
160003	CLM Corporation Superior	Superior
160005	Farmers Union Grain Terminal	Superior
160006	Peavey Co. Globe Elevator	Superior
160008	National Gypsum Co. - Cement Division	Superior
160011	M & O Elevators, Inc.	Superior
160013	Peavey Co. Flour Mills	Superior
160017	Superior Midwest Energy Terminal	Superior
160020	Lakehead Blacktop Co.	Superior
160034	Burlington Northern Ore Factory	Superior
160037	Haskins Blacktop & Construction	Gordon
KENOSHA COUNTY		
300001	Anaconda Co. - Brass Division	Kenosha
300021	Kenosha Asphalt Paving	Kenosha
KEWAUNEE COUNTY		
310001	Kewaunee County Highway Commission	---
310002	Algoma Hardwoods Inc.	Algoma
MANITOWOC COUNTY		
360004	Medusa Cement Co.	Manitowoc

STATE: WISCONSIN

I.D. NUMBER	NAME OF FACILITY	CITY
MANITOWOC COUNTY (con't)		
360005	Manitowoc County Highway Dept.	Manitowoc
360006	Manitowoc Public Utilities	Manitowoc
360007	Rockwell Lime Co.	Rockwood
360011	Reliance Construction Co. - Plant 181	Meeme
360035	Schuette Construction Co.	Kossuth
360047	Wisconsin Aluminum Foundry	Manitowoc
MARINETTE COUNTY		
380006	Rodman Industries	Marinette
380008	Ansul Company	Marinette
380018	Biehl Construction Co. -Marinette Plant	Marinette
MILWAUKEE COUNTY		
410002	Pabst Brewing Co.	Milwaukee
410003	Joseph Schlitz Brewing Co.	Milwaukee
410009	Wisconsin Electric Power - E. Wells Station	Milwaukee
410006	Briggs & Stratton Corp. - Milwaukee Plant #2	Milwaukee
410014	Ready-Crete, Inc.	Milwaukee
410027	A.O. Smith Corp.	Milwaukee
410045	Miller Brewing Co. - Milwaukee Plant	Milwaukee
410054	Milwaukee County Institutions - Power Plant	Wauwatosa
410058	Northwest Asphalt Product Inc.	Milwaukee
410059	Highway Pavers Inc. - Asphalt Plant	Milwaukee
410051	White Construction Co. - Asphalt Plant	Milwaukee

STATE: WISCONSIN

I.D. NUMBER	NAME OF FACILITY	CITY
MILWAUKEE COUNTY (con't)		
410060	Briggs & Straton Corp. - Wauwatosa Plant	Wauwatosa
410076	Grede Foundries Inc. - Milwaukee Steel Div.	Milwaukee
410077	Milwaukee Solvay Coke Co.	Milwaukee
410078	Paving Mix and Construction Co., Inc.	Oak Creek
410081	Hynite Corporation	Oak Creek
410091	Cudahy Paving Co., Inc.	Cudahy
410096	Ladish Company	Cudahy
410100	Rexnord, Inc. - Nordberg Machine Group	Milwaukee
410103	Wisconsin Electric Power - Valley Station	Milwaukee
410105	City of Milwaukee Asphalt Plant	Milwaukee
410106	Midcity Foundry Co.	Milwaukee
410110	Universal Atlas Cement Div. - U.S. Steel	Milwaukee
410126	Howmet Turbine Components	Milwaukee
410128	Barclay Foundry, Inc.	Milwaukee
410133	Kurth Malting Co., Plant 1	West Milwaukee
410134	Wehr Steel Co.	West Allis
410136	Sherwin Corp.	Milwaukee
410137	Krause Milling Co.	West Milwaukee
410138	AMPCO Metal Div. - Milwaukee	Milwaukee
410140	Milwaukee Malleable and Great Iron Works	Milwaukee
410142	Maynard Steel Casting Co.	Milwaukee
410143	Froedteri Malt Corp.	West Milwaukee
410144	Falk Corp. - Plant 1	Milwaukee

STATE: WISCONSIN

I.D. NUMBER	NAME OF FACILITY	CITY
MILWAUKEE COUNTY (con't)		
410146	Minerals Reclamation Corp.	West Allis
410153	Motor Castings Co. - Plant 1	West Allis
410154	Federal Casting Division	West Allis
410155	Motor Castings Co. - Plant 2	Milwaukee
410157	Allis Chalmers Corp. - Foundry	West Allis
410166	Grey Iron Foundry Inc. - West Allis	West Allis
410167	Briggs & Stratton Corp. - West Allis Plant	West Allis
410253	Pelton Casteel Inc. - W. Dewey Pl. Plant	Milwaukee
410256	Bucyrus - Erie Co. - Main Plant	South Milwaukee
OZAUKEE COUNTY		
460016	Wisconsin Electric Power - Port Washington Station	Port Washington
460029	White Construction Co. - Saukville Plant	Saukville
RACINE COUNTY		
520016	Payne & Dolan of Wisconsin	Racine
520027	Vulcan Materials Co. - Racine Quarry #383	Racine
520032	A.W. Oakes & Son, Inc.	Racine
520888	Evans Products Co. - Racine Steel Castings	Racine
SHEBOYGAN COUNTY		
600004	Kohler Co. - Kohler Plant	Kohler
600007	City of Sheboygan Incinerator	Sheboygan